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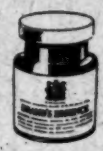

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BRITISH MEDICAL JOURNAL

LONDON SATURDAY MAY 13 1950

A HALF-CENTURY'S EXPERIENCE IN DIABETES MELLITUS*

BY

ELLIOTT P. JOSLIN, M.D.

Boston

In the last fifty years the duration of life of my diabetic patients has trebled, and in the next fifty years I believe it can be doubled even if there are no new discoveries. To attain this end it is essential that at each visit of a patient to a doctor the diabetic treatment and control of the disease be reviewed, revised, and improved and a careful search made for complications, diabetic and non-diabetic, which, if found, should be corrected.

The results of treatment of 10,673 of the fatal cases, among more than twice as many proved diabetics of the 35,597 who have consulted our group for sugar in the urine between 1897 and April 27, 1949, are shown in Table I. It is apparent that the average duration for all ages has advanced from 4.9 years in the Naunyn era, 1897–1914, to 14.4 years in the Best era, 1944–9. During this period the average age at death has risen from 44 years to 64 years and the life expectancy for each age group of all cases, fatal and living, is approximately three-fourths that of the general population of similar age.

TABLE I.—*Average Duration in Years of Life of Diabetics from Onset of Diabetes to Death in Successive Eras of Treatment*

Age at Onset (Years)	Naunyn Era, 1897–1914	Allen Era, 1914–22	Banting Era		Hagedorn Era, 1937–43	C. H. Best Era, 1944–9
			1922–9	1930–6		
All ages ..	4·9	6·1	8·0	10·4	12·5	14·4
Under 10 ..	1·3	2·9	2·8	7·3	10·3	18·3
10–19 ..	2·7	2·7	3·4	7·5	11·5	15·6
20–39 ..	4·3	4·9	8·9	14·4	16·9	18·7
40–59 ..	7·0	8·0	9·5	11·7	13·8	15·6
60 and over	4·4	6·4	5·5	7·1	8·8	9·4

Table I shows that the longest duration of life in the present era has been 18.3 and 18.7 years for those in whom the onset occurred under 10 years of age and between 20 and 39 years respectively. But the most important figure in this column is that for the group with onset in the second decade of life, because here the average duration was only 15.6 years, which relatively for their expectation of life is the lowest of all. There is little reason to suspect that diabetes is most severe in the second decade, and my only explanation for the short duration of life of our fatal cases in this period is the reaction of the adolescent to the method of treatment he has received. It constitutes an indictment of us doctors for not making it better.

Duration of Life of Diabetics Can Double

May I now submit reasons to explain why the duration of life of the diabetic can be doubled in the next fifty years? This is indicated, first, by a compilation of the statistics of our fatal cases by the Metropolitan Life Insurance Company, which has shown that already 24.1% have lived over 20 years; secondly, that 2,000 of the 30,000 diagnosed diabetics have already attained their full life expectancy; indeed, a few have attained twice their life expectancy.

Thirdly, other evidence has recently been accumulated by Dr. Ruth Reuting, of our group, who has followed up a series of 50 of our patients who had been diabetic for five years, originally studied by Dr. H. Clare Shepardson (1930): 19 of these patients died, with a duration of life of 17 years, and 31 are alive, with a duration already of 27 years. Reports from the living indicate that they have many years of health ahead. It will be difficult to double the duration of life of patients in whom the onset occurred above the age of 61, because it will mean that at the very least they must not only live longer but twice as long as they would have done had they been non-diabetic. On the other hand, to offset such handicaps we have 2,145 patients whose diabetes began when they were children. As an illustration of this possibility I would cite the fact that already 12% of these have lived 25 years, 4% 30 years, and a moiety even 35 and more years with their diabetes.

Fourthly, convincing proof of the possibility of doubling the present duration of life of diabetics is furnished by the 14 living instances of patients—recruited with one exception from those in whom the disease began at under 20 years of age—who have had the disease for 25 years and on meticulous examination are physically sound, free from eye complications as certified by ophthalmologists and from degenerative changes in the arteries as certified by radiologists.

Causes of Death of Diabetics

The causes of death have greatly changed in a half-century. Diabetic coma has been almost abolished. In a recent article, Duncan *et al.* (1949) record that for two years no death from coma has occurred at the Pennsylvania Hospital, in Philadelphia. At the Massachusetts General Hospital, I understand, only one death has occurred in two and a half years. We recently had a record of 92 successive cases of coma treated without a death, but I confess that since that time several fatalities have occurred, but we are trying to better this.

Among the 10,673 total deaths, the fall in diabetic coma as a cause is striking (see Chart and Table II). At first two-thirds of our patients died of it—and that proportion

*The collection of data for the year 1948–9 has been aided by a grant from the Life Insurance Medical Research Fund.

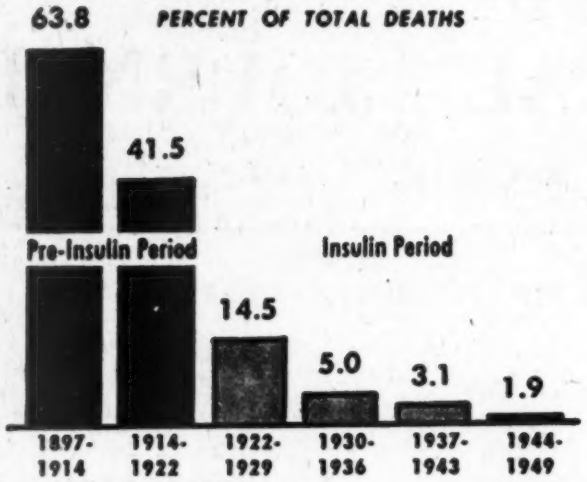

Chart showing decline in coma as a cause of death. (Experience of George F. Baker Clinic. Analysis by Metropolitan Life Insurance Company.)

TABLE II.—*Causes of Death*

	1897–1914	1914–22	1922–9	1930–6	1937–43	1944–9
All causes	100·0	100·0	100·0	100·0	100·0	100·0
Diabetic coma	63·8	41·5	14·5	5·0	3·1	1·9
Cardiovascular-renal diseases	17·5	24·6	46·8	58·3	65·0	70·1
Gangrene	3·7	4·2	8·6	7·6	5·1	3·1
Pneumonia and influenza	4·0	7·2	7·6	5·9	5·5	3·6
Other infections	3·4	5·5	8·6	6·4	5·4	3·1
Tuberculosis	4·9	4·9	5·5	3·4	2·5	2·1
Cancer	1·5	3·8	7·4	9·4	8·8	8·9
Other and unknown	4·9	12·4	9·6	11·6	9·8	10·3

was essentially the same as that recorded by von Noorden. Now, of the 2,299 deaths between 1944 and 1949, only 1.9% were from coma. This attainment reflects the change in treatment, but, to me, still more does it demonstrate the general practitioner's advance in knowledge, because almost without an exception, as Petrén observed some 40 years ago, diabetic coma originates outside rather than in the hospital, and it is the general practitioner who by his alertness, accuracy of diagnosis, and promptness in giving initial treatment has done so much to bring about this decline. My colleague Dr. Howard Root pointed out that our death rate in patients arriving in diabetic coma was to a large extent so low because the family doctor had given insulin before the patient was placed in an ambulance. Coma still occurs, but it is avoidable and usually amenable to treatment.

Tuberculosis now causes only 2.1% of our deaths ; indeed, it never caused more than 5.5%. However, tuberculosis still exists, as was recently shown by an analysis of the Shepardson group mentioned above, in which 14% of the 50 patients, 10% of the fatal cases, and 4% of the living showed it, the two living cases having been successfully operated upon and being now at work. I was told last summer that tuberculosis caused nearly 50% of the deaths in public hospitals in Paris and Birmingham, but the drop in tuberculosis in the general population in Europe has been so rapid in the last two or three years that I expect that it will soon be reflected in diabetes. Tuberculosis in our group has been most common in the patients recovering from coma. At one time, one out of five such patients developed it within three years, but here again it may be largely due to the fact that the individual who develops coma is the underprivileged, undiagnosed, and neglected diabetic, and so the one most likely to succumb to tuberculosis. To-day we are recognizing tuberculosis in our old and long-duration diabetics. Our most recently detected case was that of a patient aged 77 with diabetes of 20 years' duration. Her husband had died from it.

Infections once claimed 8.6% of our diabetics, but the proportion is now only 3.1%. Years ago, because of a remark of a well-known clinician that he had never seen one diabetic with pneumonia get well, I published the cases of a series of diabetics who had so recovered. To-day recovery is the rule, but a man aged 40 who had had diabetes for eight years and who entered our clinic in diabetic coma on December 15, 1949, died with massive bilateral pneumonia. Under infections I include not only general infections such as pneumonia but local infections such as appendicitis with its insidious and unobtrusive development, carbuncles for which an operation is almost obsolete, and many others.

Deaths from cancer have risen from 1.5% to 8.9%, and with good reason, because the patients are exposed to it for three times as many years and because they die at 64 instead of at 44. Cancer in a diabetic should be recognized earlier than in a non-diabetic, and the mortality from cancer in diabetics should be lower than in the non-diabetic population. No class of patients consult doctors over so long a period and so often as the diabetics. The routine visit of a diabetic takes time and thought if the doctor wishes his average patient to live more than 14.4 years.

The mortality from arteriosclerosis and cardiovascular-renal diseases has replaced and exceeded that from diabetic coma, and in the recent survey it reached 70.1%. Arteriosclerosis is not hopeless. First, we have our long-lived cases ; secondly, we have our patients with gangrene, which has decreased from 8.6% to 3.1%. Recently Barach (1949) referred to a mortality for amputations above the knee of 47 and 45% in a large city, but McKittrick *et al.* (1949) and his group in Boston have lowered this to 6%. Dr. Priscilla White's (1949) series was suggestive for those who had had diabetes for 20 years after an onset in childhood, and her figures have been corroborated by Root (1949), who studied an older series in which the disease started at between 15 and 30 years of age. Both agreed in showing that patients whose treatment was lax are most likely to develop arteriosclerosis, but among those who have been carefully treated it was far less common.

These statistics indicate that research in the prevention of arteriosclerosis should be carried out primarily in diabetics with a premature tendency to it, and especially in those in whom diabetes began before the age of 25, so that they can be followed up until they reach that period in life when arteriosclerosis begins to be routine in the general population. Here again the emphasis is on the success of treatment of the young diabetic, because in this group one can measure results.

Follow-up

In the follow-up of our 2,145 living child diabetics at the beginning of 1949, 33 deaths were reported. The causes of death in five cases are not yet known to us. Three (9.1%) of these deaths were caused by tuberculosis, showing the necessity for annual *x*-ray examination of diabetics and bringing up for discussion the possibility of B.C.G. prophylactic treatment of those with tuberculin-negative reactions. Please notice that this incidence of tuberculosis is high among the fatal cases, the neglected cases. Five (15.1%) of the deaths were from coma, indicating the irresponsible course of life of these young individuals. Two (6.1%) were due to accidents, not to hypoglycaemia.

The overwhelming cause of death was the cardiovascular–renal diseases, which accounted for 18 (54.5%) deaths. This shows the chief enemy which the young diabetic must face and the enemy you and I as general practitioners must combat. These young patients must in some way or other be told that if they do not keep their diabetes controlled they are liable to serious complications in their eyes, their kidneys, their hearts, or their brains. We can always offset this serious advice by emphasizing that those who are perfect after 25 years are in general those who have followed treatment the best.

Treatment

It is for the general practitioner to-day to make treatment of the patient as safe in his home as it is in hospital. This cannot be done unless the patient is under supervision. Whether one should say that the patient must report every three months or get another doctor is something for us to consider. Patients get tired of us doctors. We do not always give them something new at each visit, and, if we are holding a diabetic in bounds, that must be done. It means hard work, time, and interest. In treating diabetes in the home the family doctor has a great advantage over those who treat in hospital. At home the patient can have an early breakfast and a late supper, and not be under eight-hour labour rules—breakfast at 8 to 8.30 a.m. and the evening meal at 5 to 5.30 p.m. In the home he can have the advantage of exercise, and that is so difficult in hospital. At home one can plan for continuity of treatment and enlist the support of the entire family. To do this the doctor must more and more secure the help of the less expensive nurses' aides who can be taught to carry out minor duties and assume a part of the teaching.

The treatment of diabetes to-day is by no means as puritanical as at the turn of the century or in the Allen era, 1914–22, when we literally starved a diabetic to let him live and later were rewarded for so doing; but it is still puritanical. I venture the thought that no one would now like to keep the carbohydrate in the diet of a diabetic under 150 g.; all would maintain fat at a level which will prevent overweight, and protein at from 3 to 1 g. per kg., according to the patient's age. All recognize that the diet must be spread out from an early breakfast to a late evening meal, and generally with a little carbohydrate lunch in the forenoon, afternoon, and on retiring, to promote utilization and avoid insulin reactions.

I have profited much from watching Dr. Priscilla White's diabetic girls who are pregnant. They are so anxious to have a baby they would not deviate from the prescribed diet one iota. They maintain weight, keep sugar-free, and live on 180 to 200 g. of carbohydrate, cheerfully taking insulin as needed, one, two, three, or four times daily. By subtracting from this diet the carbohydrate, protein, and fat which the foetus needs, we can find on what carbohydrate an inactive young woman can live happily and efficiently.

Insulin is needed for far more diabetics, as I see them, than is reported by some physicians. Far, far more than 60% of our cases depend for their lives on insulin, and even this figure is low for our diabetics above the age of 40.

Education of the Patient

Education is everything for the diabetic, and I cannot support too heartily the article by Dr. Russell M. Wilder, jun. (1949), of the Mayo Clinic. If possible, the patient should be under observation in a convalescent home or a hospital in the first few days, but if that cannot be carried out—and we have great difficulty in doing this ourselves—then one must pay frequent visits to the clinic for instruction and control during the first week. After the first week the patient's interest begins to wane. Strike, therefore, while the iron is hot. We must tell the truth and be sure that our patients know what they face.

Recently I have been receiving replies in answer to a follow-up of those whose onset occurred in childhood, and these are revealing. One who has had the disease 25 years writes that she does not want to go to a diabetic doctor in her large city, but wishes to have a general practitioner who will be interested in her general condition. Another dislikes a diabetic doctor who sends her to a laboratory some miles away without her breakfast in the morning for a blood-sugar estimation and telephones the result at night. She wants a family doctor. Another wants a grant to study abroad, but she has had no family doctor, and came to the clinic, without having been seen by us for several years, with a blood sugar of 464 mg. A young man whose family doctor had died came recently with two teeth in the upper jaw and six in the lower, retinitis, a liver four fingerbreadths below his costal margin, 200 mg. of albumin in his urine, and a story of ten beers a day. He was a dwarf in stature, and although 25.3 years of age and a diabetic of 19.9 years' duration he did not know how many units of insulin his faithful mother was giving him.

Another college boy replies that he feels well, has not seen a doctor for seven or eight years, asserts that his desire is for happiness, and wishes to complete his college course and get married. I wrote him: "Would you advise your sister to marry a diabetic who had not taken stock of his condition in the last ten years?" You see, the general practitioner truly has the future of the diabetic in his hands, and it is only through him and his detailed and continual emphasis upon controlling the diabetes that the duration of life of diabetics can be doubled. Diabetes cannot be treated over the counter. Cases like those I have cited cannot be handled by wholesale socialized medicine. The only hope for such people is the individual personality of the doctor integrated into the individual life of the young diabetic patient.

Increase in Diabetes

The appalling increase in diabetes which has come to our attention in the last year or two continues. I understand from the reports which will be published in a forthcoming issue of *Diabetes Abstracts* that the number of diabetics is steadily growing in the U.S.A. What is especially significant, however, is the lessening of the difference in incidence between the high mortalities reported in the North and the low mortalities in the South. In Oxford, Massachusetts, and Jacksonville, Florida, practically the same frequency of diabetes in the general population was discovered—1% in Massachusetts and 0.9% in Florida. We must remember that diabetes is universal and the distribution approximately the same if one makes allowance for sex, overweight, age, and the percentage of the Jewish race. Along with all the energy spent upon the detection drive, we should remember that it is of no use discovering new diabetics unless we are in a position to treat them.

We must ask for publication of methods of treatment, but care should be taken in stating how many of the cases have been followed up. As frank and helpful as are the results of Fanconi *et al.* (1948), the fact that 49 of 136

cases were untraced is a great disappointment. We hope that they were their best cases, but are we justified in drawing that conclusion? It may cost a considerable sum per patient to secure information about these 49 cases, but it is more than worth while. Perhaps in sending out letters and trying to secure replies we should call to the attention of these young people that when they ask us to recommend them for jobs we cannot do so unless we know how they are getting along.

I am more sympathetic in completing follow-ups this year than heretofore. At the beginning of 1949 we had 2,145 known subjects living who had been diabetic from childhood. By September 1,258 had been traced. Despite our first, second, and third letters, 2,365 in all, there still remained 50 untraced, but I believe it is only fair to these people and to all of us doctors to learn whether the treatment recommended has been good or bad and to discover whether it could be improved. (By April 1 of this year there were eight untraced.)

Apollinaire Bouchardat, who was born in 1806 and died in 1886, was the first doctor to give hope to the diabetic. He prescribed a palatable diet, taught diabetics, even before Fehling's test was printed, to examine the urine after they ate and thus find out whether a food was beneficial or not. He urged them to take exercise and demonstrated its advantages. Yet Bouchardat (1883), in offering hope for the diabetics, qualified his statement so as not to include children, and wrote that he had never seen a pregnant diabetic woman and, indeed, hardly gives us a hint that he recognized diabetic coma. But he laid the foundation for the treatment we are practising to-day. How pleased he would be to see the advances made, and I can imagine he would agree with me that the next fifty years hold more of promise than the last.

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A special uniform is being produced by the Ministry of Health for the trained women members of the National Hospital Service Reserve to wear when on duty in hospital. The uniform is of white drill, and different coloured epaulettes and belts will be worn—dark blue for a State-registered nurse, maroon for a State-certificated midwife, green for a State-enrolled assistant nurse, and white for a nursing assistant class 1. The State-registered nurses and midwives will wear caps of the veil type, and the State-enrolled assistant nurses and nursing assistants class 1 will have white close-fitting caps with a turned-up brim in front. Male trained members will wear coloured epaulettes on the white coats provided by the hospitals. The Reserve also includes a section for auxiliary members, whose training is undertaken by the St. John Ambulance Brigade and British Red Cross Society. They wear the indoor uniform of these organizations while taking hospital training or refresher courses. The Reserve is open to women aged between 17½ and 60 and to men between 30 and 60. There are already over 200 trained members and 2,300 auxiliary members in England and Wales.

PROCAINE PENICILLIN: CHOICE OF PREPARATION

BY

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The production of depot or repository preparations has been an important development in penicillin therapy. In view of the rapid excretion of penicillin after the injection of aqueous solutions, the usual method of administration has been by injection at frequent intervals. This is a tedious procedure, causing much discomfort to the patient and a heavy strain on the nursing and medical staff.

Many attempts have been made to overcome these objections. These have involved quite different principles: one scheme is to give large doses (up to 500,000 units) of aqueous penicillin at intervals of 8–24 hours; another is to delay the renal excretion of penicillin by means of *p*-aminohippuric acid or caronamide; a third scheme is to delay the absorption of penicillin from the tissues by means of depot or repository preparations. The last method has been mainly adopted in this country for prolonging the blood levels.

The original depot products contained a mixture of beeswax (4–5%) and arachis oil; with doses containing 300,000 units of penicillin, effective blood levels could be maintained for 8–12 hours. These preparations, being very viscous, were not only difficult to inject but also tended to produce local pain and discomfort. In view of these serious objections the production of procaine penicillin was an important advance (Salivar, Hedger, and Brown, 1948). This preparation is an equimolecular combination of crystalline penicillin G and procaine hydrochloride; it is a relatively insoluble compound and was originally suspended in arachis oil. Procaine penicillin causes little pain and is easier to inject than the beeswax products; with the standard dose of 300,000 units, effective blood levels are maintained for 18–24 hours (Jones and Shooter, 1948). It was later found that the effect could be further prolonged by incorporating 2% (w/v) aluminium monostearate in the oily procaine penicillin (Buckwalter and Dickison, 1948); Boger and Flippin (1949) claimed that, after an injection of 300,000 units, effective blood levels were present for 4–6 days.

Young *et al.* (1949) tested various procaine penicillin preparations and considered that the monostearate product was superior to the watery or oily preparations for delaying absorption; they considered that the particle size of the penicillin crystals should not be too large (5–20 μ), and recommended that for the treatment of severe infections the procaine preparation should be combined with a soluble salt of penicillin. Emery *et al.* (1949), using a monostearate preparation with a particle size of 5 μ, obtained satisfactory levels in children for 24–48 hours, but experienced some difficulty in administration owing to the oily nature of the preparation. Wayne *et al.* (1949) confirmed these results, and found that by increasing the dose to 600,000 units assayable blood levels were often obtained after 72 hours.

There is no doubt that procaine penicillin with aluminium monostearate is superior to previous preparations in its capacity to prolong the blood levels, but two important

objections have been made—namely, difficulty in administration owing to viscosity, and, secondly, its unsuitability for the treatment of severe infections owing to the relatively low blood levels attained.

The value of aqueous suspensions of procaine penicillin and reinforced monostearate preparations has consequently been investigated and the results are now reported.

Technique

The various penicillin preparations were given intramuscularly and samples of venous blood were collected at stated intervals. The serum was separated without delay and stored in the refrigerator until required for assay.

The penicillin assay was carried out by the serial dilution method. The dilutions were made in sterile tubes (3 by ½ in. : 7.6 by 1 cm.) containing glucose broth which were seeded with a standard drop of an 18-hour culture of the "Oxford" *Staph. pyogenes*; readings were made after 18 hours' incubation at 37° C. and compared with a control series containing known amounts of a standard penicillin (Brindle *et al.*, 1947).

Results

Two different types of preparation, with a particle size of 20 μ or less, were subjected to investigation, the main object of which was to determine the blood levels produced by a standard injection of 1 ml.

The preparations were :—Type A : procaine penicillin (300,000 units) in arachis oil with 2% (w/v) aluminium monostearate, plus crystalline potassium penicillin G (100,000 units) in 1 ml. Type B : aqueous procaine penicillin (300,000 and 400,000 units per ml.).

Type A.—The reinforced product (monostearate procaine penicillin plus crystalline penicillin) contained in 1 ml. a total of 400,000 units of penicillin. The standard dosage of 1 ml. was given to 31 adults, the majority of whom were post-operative cases; in no instance was there any apparent impairment of renal function. A total of 116 estimations were made at times varying from half an hour to 48 hours (Fig. 1).

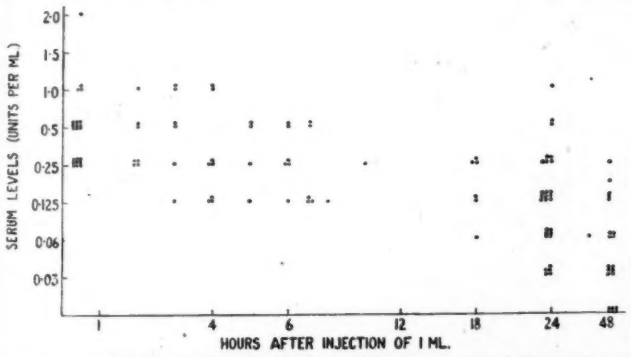

FIG. 1.—Serum levels produced by injection of 300,000 units of procaine penicillin + 2% aluminium monostearate + 100,000 units of potassium penicillin G per ml.

Consistently high levels were obtained throughout the 24-hour period. The immediate response was good, although marked individual variation was shown : during the first hour the readings covered a range of 0.25–2 units per ml., with an average of approximately 0.5 unit per ml. These figures were maintained for several hours and then fell gradually to an average of 0.14 u./ml. at 24 hours, when 28 out of 28 gave an effective level (0.03 u./ml. or greater); after 48 hours 15 out of 21 gave assayable levels. The levels during the initial 4–6 hours were consistently higher than those produced by the same amount of the ordinary monostearate procaine penicillin.

The administration of the preparation presented a slight problem, particularly in cold weather, owing to its viscosity; this was usually overcome by gently warming the bottle and using a 19 S.W.G. needle.

Six patients, some with minor staphylococcal infections, received daily injections of 1 ml. for 4–5 days with satisfactory clinical results. Readings were made at the end of each 24-hour period immediately before the injection of the next dose of penicillin. The results are shown in the Table, together with comparable figures given by the other preparations. Average levels of at least 0.15 u./ml. were maintained throughout.

Table Showing Average Readings with One Daily Dose

Preparation	No. of Patients	Serum Penicillin Concn. (u./ml.) at End of			
		24 Hours	48 Hours	72 Hours	96 Hours
Procaine penicillin, 300,000 units, in arachis oil with 2% w/v aluminium monostearate + potassium penicillin G 100,000 units ..	6	0·156	0·25	0·225	0·375
Aqueous procaine penicillin (300,000 units)	6	0·13	0·219	0·203	0·265
Aqueous procaine penicillin (400,000 units)	11	0·259	0·18	0·205	0·48

Type B.—Two distinct types of aqueous procaine penicillin were subjected to trial : (1) powdered procaine penicillin to which an aqueous diluent is added immediately before use, and (2) a stable suspension containing procaine penicillin in a finely divided state, dispersed by means of wetting and suspending agents. Strictly comparable results were given by both preparations, and therefore the results have been combined in the charts. Two strengths (300,000 u./ml. and 400,000 u./ml.) were investigated, using a standard dose of 1 ml. The particle size was small (20 μ or less), and no difficulty in administration was experienced using a 19 S.W.G. needle.

(*a*) 300,000 units of aqueous procaine penicillin were given to 49 individuals, 29 receiving the freshly prepared suspension and 20 the stable preparation; 111 assays were made at intervals of ½–48 hours (Fig. 2). Relatively high levels (0.25–1 u./ml.) were obtained within ½–1 hour and then maintained for 12–18

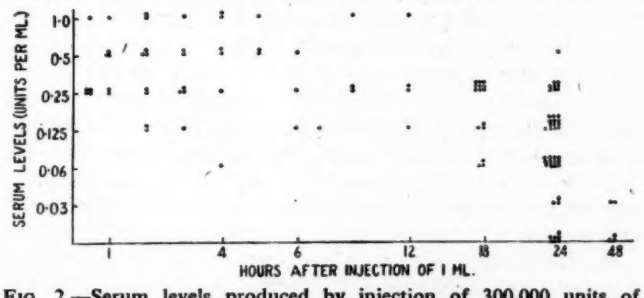

FIG. 2.—Serum levels produced by injection of 300,000 units of aqueous procaine penicillin.

hours. At 24 hours, while the majority gave therapeutic levels, assayable levels were not obtained in 7 out of 44. Six patients received daily injections of 1 ml. for 2–4 days, and readings were taken at the end of each 24-hour period; effective levels were maintained throughout (see Table).

(*b*) The failure of 300,000 units of aqueous procaine penicillin to produce a satisfactory level in all cases at the end of 24 hours confirms previous reports (Whittlesey and Hewitt, 1948; Young *et al.*, 1949). While it has been the general experience that 600,000 units in a dose of 2 ml. give demonstrable levels for at least 24 hours, it was considered that a total dosage of 1 ml. offers definite advantages.

A stable preparation containing 400,000 units of procaine penicillin in 1 ml. was consequently prepared and subjected

to trial; 82 readings at various intervals were obtained from 47 subjects (Fig. 3).

Effective levels were given throughout the 24-hour period; at 24 hours 40 out of 40 gave readings varying between 0.03 and 1 u./ml., with an average of 0.17 u./ml.

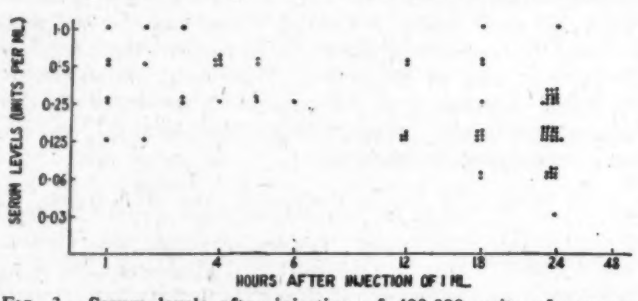

FIG. 3.—Serum levels after injection of 400,000 units of aqueous procaine penicillin.

Eleven patients, five having minor staphylococcal infections, were given 1 ml. daily for 3–4 days (see Table). Effective blood levels were maintained, while the therapeutic response was good in the limited number of cases available for clinical trial.

Discussion

A definite change is taking place in the schedule of penicillin dosage. The original conception of regular doses at frequent intervals is rapidly losing favour: the clinical results are undoubtedly good, but the procedure is tedious and time-consuming, and is often the cause of much discomfort and inconvenience to the patient. The present tendency is to administer large doses at infrequent intervals in the form of either aqueous crystalline penicillin or some repository preparation. The principle governing the use of crystalline penicillin solutions is the intermittent production of high blood levels having a marked bactericidal activity. The object with depot preparations is to maintain an effective blood level throughout the course of treatment. Striking clinical results have been claimed for both forms of preparation (Boger and Flippin, 1949; Griffiths *et al.*, 1949; Tompsett *et al.*, 1949; Weiss and Steinberg, 1949).

The choice of repository preparation is mainly dependent on three important properties—ease of administration, stability, and capacity to sustain the blood levels.

The readiness with which the suspension can be drawn into the syringe through the usual range of needles and then injected into the patient depends on the particle size and viscosity of the suspension. A particle size of 20 μ or less can be readily manipulated, and if such suspensions are shaken vigorously before use clogging of the needle does not occur. Viscosity has proved a serious handicap, which was especially noticeable in the beeswax products. The oily procaine preparations have greater mobility than the beeswax preparations, but nevertheless during cold weather some difficulty in administration is experienced. In consequence the aqueous suspensions have certain advantages for routine use, particularly in general practice.

Stability is another factor worthy of consideration. Products which remain potent for a limited period are wasteful and tend to have a restricted field of application. They are suitable for big clinics but not for the treatment of individual cases. Stable aqueous suspensions of procaine penicillin seem to be of greater practical value than the powdered form requiring the addition of an aqueous diluent before use, as the preliminary manipulation is an unnecessary inconvenience and the potency of the latter product is retained for only a short period.

The penicillin level in the blood is accepted as a convenient index of therapeutic value, and the minimum effective level for sensitive organisms is generally considered to be 0.03–0.06 u. per ml. It is, however, important to appreciate that these are not absolute values. In assessing the significance of blood levels several factors must be considered; these include the severity of the infection, the sensitivity and accessibility of the invading organism, and the nature of the lesion. The levels in the tissues of an acute inflammatory exudate will be much higher than those found in a relatively avascular focus of infection.

There is evidence to indicate that very high concentrations of penicillin may not be desirable. Eagle and Musselman (1948), by *in vitro* tests, demonstrated that the maximum bactericidal effect on *Staph. pyogenes* was obtained by a concentration of about 0.1 u. per ml.; in the experiments, however, organisms constant in number were tested under optimal conditions for penicillin activity. Eagle (1948) suggested that the activity of a given dosage of penicillin is mainly dependent on the time a maximal bactericidal level is maintained: when large doses of aqueous penicillin are given at infrequent intervals much of the penicillin is probably wasted and the interval between doses might be long enough to allow the surviving bacteria to multiply. It is known, however, that the bacteriostatic effect of penicillin persists for some time after the removal of the drug, and also that penicillin tends to persist longer at the site of an inflammatory reaction than in the blood stream, although the local level may not equal the highest found in the blood (Ungar, 1950). It would appear that, while an effective blood level need not always be present, the time when this falls below the therapeutic level should be short.

The results of this trial indicate that both types of preparation fulfil most of the above requirements. The blood levels have not reached the height obtainable with aqueous solutions of crystalline penicillin, but they have tended to remain well above the accepted minimal effective levels. In fact, the levels compare quite favourably with those produced by the old standard form of therapy—i.e., 20,000 units three-hourly (Fig. 4). This dosage schedule has given

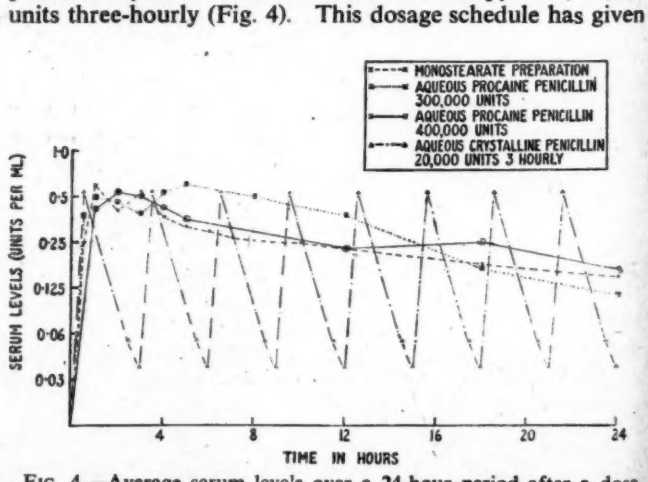

FIG. 4.—Average serum levels over a 24-hour period after a dose of 1 ml. of procaine penicillin, compared with levels given by 20,000 units of aqueous penicillin three-hourly.

excellent results over a period of many years in a wide variety of clinical conditions. A clinical trial has not here been attempted, but the small series of minor infections treated with these depot products have responded well. It does therefore seem reasonable to suggest that these depot preparations have a place in routine therapy. In the case of severe or fulminating infections the initial doses of the

depot preparation may require reinforcement with the crystalline penicillin, but subsequent daily dosage with the depot product should prove adequate.

The development of procaine penicillin has been rapid, and many preparations are now available. There is no doubt that the reinforced monostearate preparation gives the greatest prolongation of effect in combination with relatively high initial blood levels. It is, however, an oily preparation which presents some difficulty in administration, particularly in cold weather; this is a serious disadvantage for routine use in general practice. It is nevertheless a valuable preparation which should be very useful when it is desirable to give the injection at longer intervals than 24 hours. Considerable prolongation of the blood levels can be achieved by increasing the dosage of the monostearate preparations; but such injections tend to produce local discomfort, and difficulty in administration may be experienced (Peacock and Gillespie, 1950).

The aqueous preparation (400,000 u./ml.) has proved a satisfactory product for daily administration. It is stable, and if well shaken can be injected without difficulty. In this trial effective levels have been consistently maintained in adults for 24 hours after the injection of 1 ml. This should be a convenient preparation for general use.

It is interesting to note that throughout this investigation no instance of hypersensitiveness to the procaine was observed, and that, apart from the initial prick, no local discomfort was reported.

Summary

Blood levels have been estimated in adults after the intramuscular injection of 1 ml. of various procaine penicillin preparations.

With procaine penicillin (300,000 units) in arachis oil with 2% aluminium monostearate plus crystalline potassium penicillin G (100,000 units), effective levels were maintained for the 24-hour period in 28 out of 28 individuals (15 out of 21 gave assayable levels after 48 hours), but some difficulty in administration was experienced.

Aqueous procaine penicillin (300,000 units per ml.) is a convenient preparation, but assayable levels were not produced in 7 out of 44 subjects after 24 hours.

A stable aqueous procaine penicillin suspension (400,000 u./ml.) proved a satisfactory product. It was injected without difficulty and gave satisfactory levels for a 24-hour period in 40 out of 40 cases. This preparation should prove particularly valuable in general practice.

The various preparations of procaine penicillin were kindly supplied by Imperial Chemical (Pharmaceuticals), Ltd., Manchester.

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FOOD AND MANKIND*

BY

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Malnutrition, famine, starvation, have been man's lot since the beginning of his existence. The drive of industrialization which a century ago was expected automatically to fill his life—and his belly—with all his needs has instead been found only to raise quite other problems. Yet in the last decade man's conscience has more and more been awakened to the belief that, with the potential riches at his disposal, the problems of feeding himself and his world family could be solved. These problems may be put in this way: (1) Can the earth produce enough food for its inhabitants? (2) Can the food be equitably distributed among the countries according to their population? (3) Can the food be equitably distributed among the population of each country according to their individual requirements?

World Food Production

Before the war there were indications that the world was already producing too much food. Some of the chief food-producing countries were adopting restrictive practices, such as limiting the areas to be planted with grain or pouring away thousands of gallons of milk. Yet side by side with this were the ever-recurring famines in countries such as India and China, with, in the intervening years, stunted growth, ill-health, pestilence, and misery, affecting more than a third of the world's inhabitants. Those whose conscience was disturbed when they thought of the masses who hungered while food was destroyed began to speak of "poverty in the midst of plenty." It is certainly true that millions might have been fed, and hundreds of thousands might have lived who otherwise starved to death, if the distribution of food could have been better organized. But was there in fact plenty? The answer is most emphatically "No."

With our present nutritional knowledge we can make reasonably intelligent estimates of the amount of food required properly to feed the whole of mankind (Fig. 1). For practical purposes we can say that an increase of food of something like twofold is needed in order adequately to feed humanity. For such an increase to be possible three separate problems must be tackled. First, it is necessary to prevent the wastage and loss of food after it has been produced. Secondly, since by far the greater part of our food comes from the soil, it is necessary to prevent the erosion which is occurring in alarming degrees over most of the world's surface. Thirdly, it is necessary to improve the techniques at our disposal to achieve greater yields of food (Fig. 2).

How much food is lost by pests, infestation, and disease we do not know. One authoritative estimate is that about one-fifth of the total grain is destroyed each year—an amount which would be enough to feed 300 million people. Here is certainly a field for energetic investigation and action. The second problem of increasing food production is that concerned with the loss of good soil. We have only to look at the once fertile fields of Greece, North Africa, and Palestine to realize the devastating results of soil erosion. And a farmer from the Middle West United

*Based on a Public Lecture delivered on November 24, 1949, at King's College of Household and Social Science, University of London.

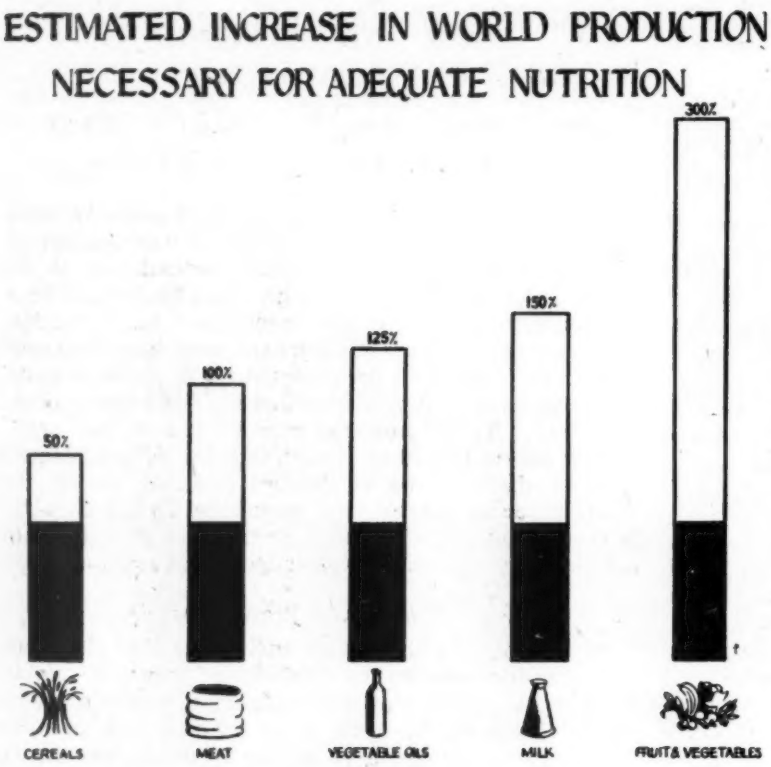

FIG. 1

States need not even bother about history and geography—he has seen himself how fertile fields can be converted into arid, dusty deserts. This insidious but still disastrous process can be truly appreciated only when its extent is realized. In the United States alone, 8,000 acres daily are being lost by soil erosion—2½ million acres a year. In that country probably some 300 million acres have already been lost, an area which could produce enough food for 10% of the present population of the world. Of the whole cultivated surface of the earth, some 3,000 million acres, we are losing soil at the rate of 10 to 20 million acres a year—good, rich soil, an inch of which may take 500 years to form and which, with all our scientific and technical ingenuity, we cannot fashion ourselves.

The prevention of erosion requires a co-ordinated programme involving vast projects of reafforestation. Implementation of such a scheme means the vesting in some authority of powers to take action for the wider interests of the community against the immediate interests of individual farmers, timber concessionaires, and the like. This is perhaps why the most noteworthy measures for soil conservation are to be seen on a small scale in Israel and on an enormously large scale in the U.S.S.R. In Israel they are possible because of the self-sacrificing idealism of the pioneers, who have literally been able to make the desert blossom like the rose. In the U.S.S.R., for good or for evil, private interests are subordinated to communal interests. Thus is possible the vast plan of reafforestation and land improvement to be carried out over the next 15 years in European Russia. This is to include the planting of 12½ million acres of forest, with four strips totalling 3,000 miles in length.

The third method of increasing supplies of food is to improve and increase production. In large areas of the world agriculture is still carried on in the most primitive way. Improvement in agricultural technique, possible only in many countries by almost revolutionary changes in their economic situation, could go a long way to improving yield. Examples of what can be done are the production of ground-nuts and sunflower seeds in East Africa, the improvement of breeds of cattle, for both meat and milk, by artificial insemination, and the production of strains of wheat which can be grown within the Arctic circle. The elimination of diseases such as those of wheat or potatoes or cattle would greatly affect the yield of food. For example, bovine mastitis, which could be almost entirely eliminated by treatment with penicillin, seems to be responsible in Europe for the loss of about 1,500 million gallons of milk each year, enough to give one pint a day to more than 30 million people, or, in Britain, enough to give an extra pint of milk each day to every child under 5.

Other possibilities also present themselves for increasing world supplies of food. Among these are projects for fertilizing enclosed or nearly enclosed seas in order to increase the yield of fish, and projects for the growth of food yeast on media derived in the main from wood or from useless plant products. What such schemes may eventually mean in satisfying a hungry world we can at this time only guess.

The Problem of Population

The question of total supplies of food is, of course, bound up with the question of world population. The present population of about 2,300 millions will probably grow to 3,000 millions or more by the end of the century. The growth is particularly rapid in Eastern Europe and Asia. In 50 years' time the population of Asia is expected to reach a figure something like that of the present population of the whole world. Thus a failure to increase the world supplies of food not only means no improvement in the nutritional standards of humanity, but will indeed mean the deterioration as more and more mouths will need to be fed. The problem is not only one for ourselves but for our children and their children. Many of us are not satisfied with the solutions suggested by the new followers of Malthus, that medical aid such as would

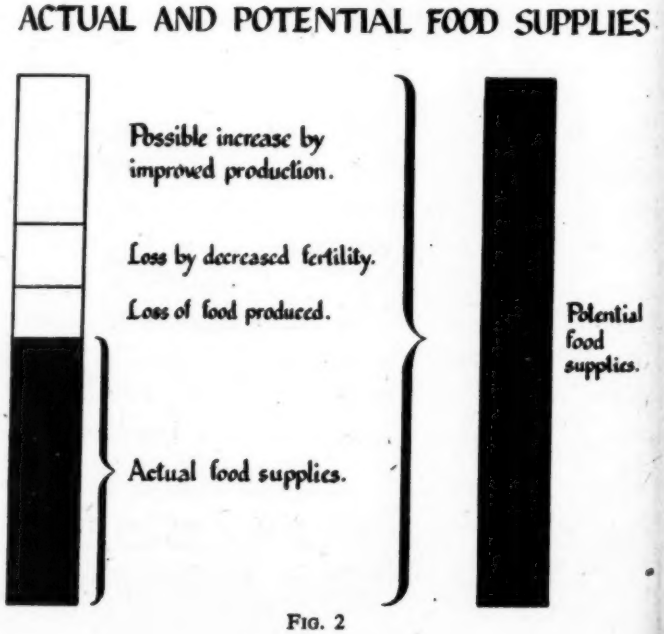
ACTUAL AND POTENTIAL FOOD SUPPLIES
Possible increase by improved production.
Loss by decreased fertility.
Loss of food produced.
Actual food supplies.
Potential food supplies.

FIG. 2

lead, for example, to the virtual elimination of killing diseases like malaria should be withheld from countries in which the population is increasing rapidly. Nor are we looking forward to a new war, atomic or bacteriological, to check the rise in population.

Although we do not know what it is, there must, of course, be a limit to the earth's capacity to produce food and so meet the needs of an expanding population. It may be that an improvement in living conditions, which would follow improved feeding, may result in a decreased birth rate. This has been the experience in most of the civilized communities of the world. It is also possible that rapidly increasing populations may be persuaded to make more use of contraceptive techniques. It cannot, however, be expected that even simple methods of contraception will be used to any appreciable extent in communities where living conditions and levels of education are very low. We seem to be faced, therefore, with a vicious circle in which improved living conditions are necessary for the extensive adoption of methods of birth control, but improvements cannot be expected until the more rapidly expanding population adopts such methods. Perhaps the solution lies in the discovery and use of new principles of birth control, as hinted by Lord Horder recently. In any event, it is certain that the population will continue to rise for the next 50 years or so, and our part is clear to produce as much food as we can so as to provide for ourselves and our children (Fig. 3).

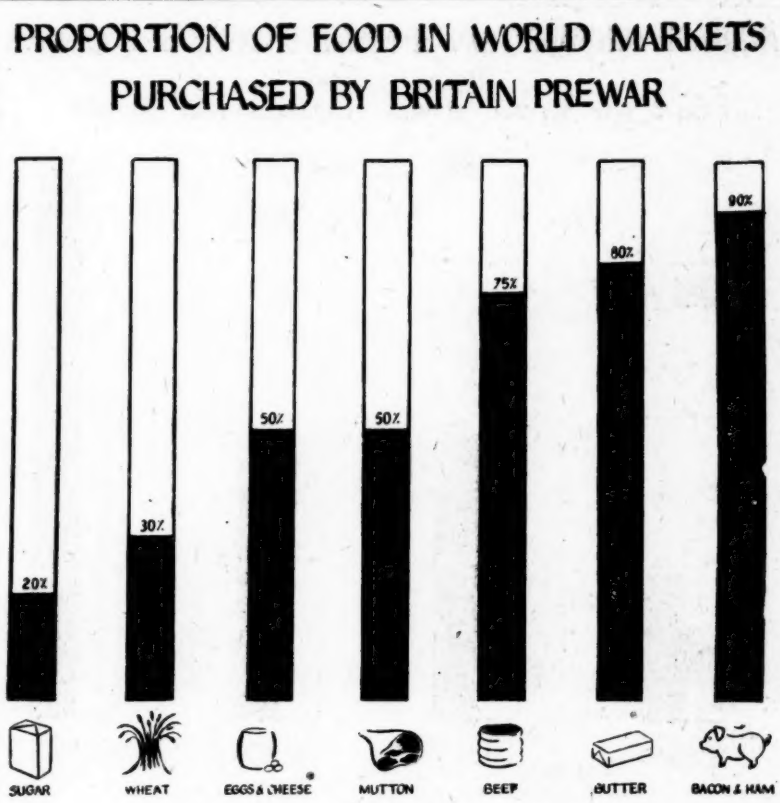

FIG. 4

International Distribution

Apart from attempting to obtain from the earth the food needed by all its peoples, it is necessary to ensure that each country gets its fair share. This is the more important since countries differ considerably in the extent to which each produces sufficient food for its population. In Britain, for example, we produced about 30% of our needs before the war and are producing between 35 and 40% of our needs now. Whereas about 70% of the world's population are engaged in agriculture, less than 10% of our population are so engaged. In order to obtain the high proportion of imported food that we need, we have to give in exchange, directly or indirectly, products of our natural resources or manufacture which are wanted by the food-exporting countries. So long as we were a comparatively wealthy industrial country, we were able to do this fairly easily. Before the war Britain took an enormous proportion of the supplies exported by all the other countries (Fig. 4).

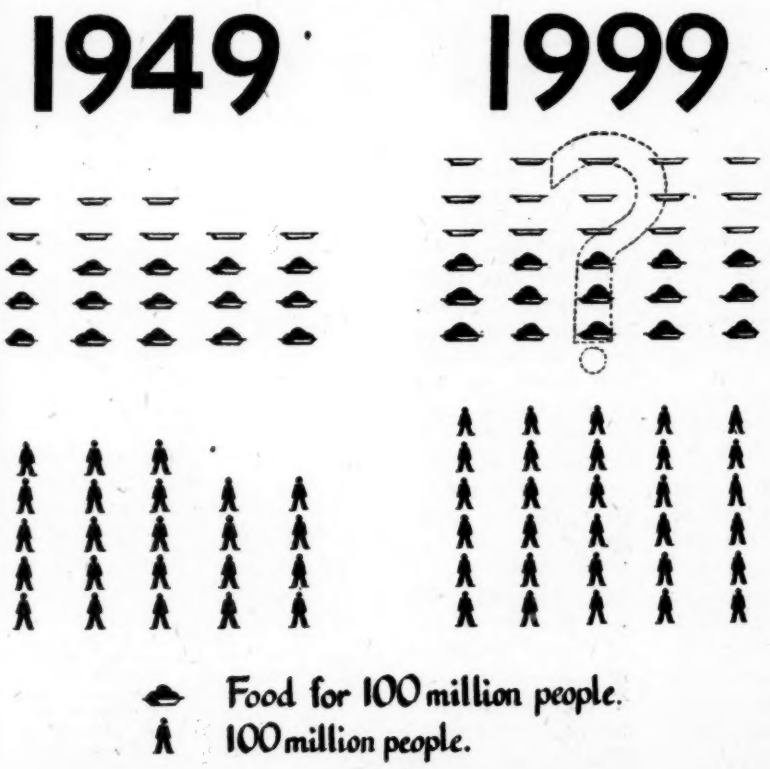

FIG. 3

The extent to which a food-importing country like Britain can buy the foods it needs depends chiefly on three factors: first, the amount of food which is put into the world market; secondly, the wealth of the importing country; and, thirdly, the wealth of other competing importing countries. The amount of food available for export by the food-producing countries such as the United States, Canada, or the Argentine depends not only on how much they produce, but also on how much they themselves retain for consumption. The amount they produced before the war, as we saw, was often deliberately restricted in order to maintain world prices. Nor is this a thing of the past, for the United States has decided to restrict acreage to be sown next year with grain by 17%. Apart, however, from the amount

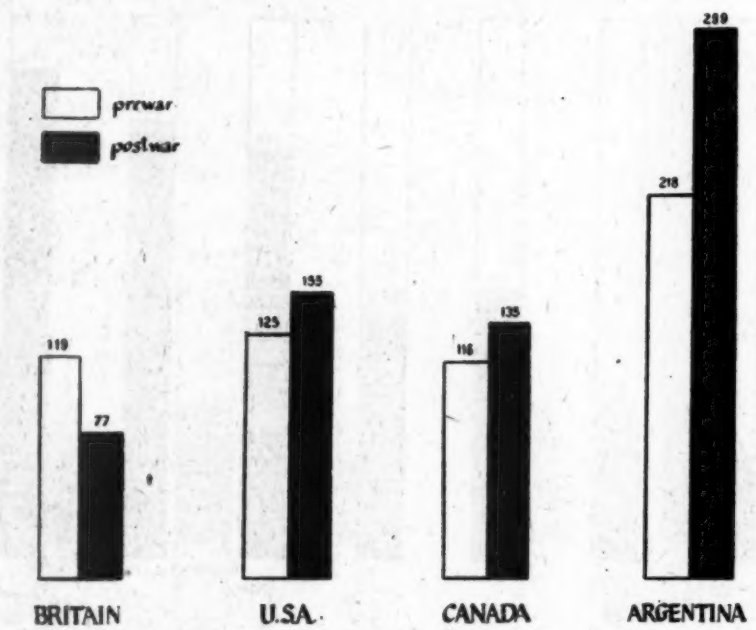

FIG. 5

produced, the amount of food available for export will also depend on how much is eaten in the producing country. As the standard of living has risen in some of the main food-exporting countries, the consumption by them of many of the more desirable foods has also risen. Meat consumption has increased appreciably in the United States, Canada, and the Argentine, so that less is available for export (Fig. 5). Africa and Asia, with 60% of the world's population, produce about the same proportion of the world's vegetable oils, yet they retain only 25% of what they produce. As their material conditions improve, it can be expected that they will themselves consume more of this food.

The second factor determining the amount of food a country like Britain can import is the wealth of that country. As we have so often been told, wealth means the amount of goods we can produce from our natural resources and manufacture. But it is more than that. Not only have we to *produce* the goods but we have also to produce the *goods*. That is, we have to produce commodities which are wanted by the countries from which we have to import food. With the increasing industrialization not only of countries like the United States but of countries formerly poorly industrialized, the demand for those commodities which we wish to exchange for food is falling. It is this which is the essence of our exchange problems.

Lastly, there are several countries which are anxious to import more food. As we have seen, before the war Britain was by far the largest importer of food. After five years of war, in which Britain was spending its resources, mostly its capital resources, at the rate of £15 million daily, we cannot expect it to have retained the same favourable position. Other countries which have suffered less material loss than we have are now more able to compete for the limited amount of food on the world's markets. It is true, therefore, that the food supplies of some European countries are, relative to their pre-war supplies, better than that of Britain. But it is also true that, in fact, our food supplies are still in many respects better than those of most European countries.

Let us be clear on this point. It is futile to expect that any alteration of government, any making or unmaking of plans, can affect the factors we have discussed. There is simply not enough food produced in the world at present for every country to have all it would like. We in Britain have done very well so far—we cannot expect to recover our former position, and certainly not to improve on it, without a considerable amount of international co-operation and effort in improving the production and the distribution of food among nations.

Intranational Distribution

However well a country is supplied with food it cannot be assumed that all the individuals in that country are adequately fed. The United States, for its population, has a greater supply of many important foods, such as meat, milk, and fats, than most countries. But it is undoubtedly true that there is in the United States a higher proportion of ill-nourished people, even of people with obvious nutritional deficiency, than in Britain. If we consider only one nutritional disease, pellagra, we find that, in spite of the energetic steps taken to eradicate it, there were in 1946 still about 100,000 people suffering from pellagra, of whom nearly 1,000 died.

Unless there is a superabundance of food at a price within the reach of even the poorest, it must be expected that the more nutritious foods, which are also the more expensive—foods like milk, meat, cheese, eggs, fruit, and vegetables—will find their way chiefly to the tables of the wealthier people. There is only one way of ensuring that the essential foods are available to all, irrespective of the length of their purse. That way is by the dual system of price control with food subsidies, so that the price is held within the reach of all, and rationing so that the better-off cannot take more than their share and leave insufficient for the less well off (Fig. 6). The alternative of free markets means that the wealthier, buying as much as they wish, will drive up the price until the demand by the less wealthy is reduced so as to be equal to the remaining small supply.

The effect of the dual system of price control and rationing can be illustrated by the distribution of milk in Britain. Before the war there were people who, we know, consumed

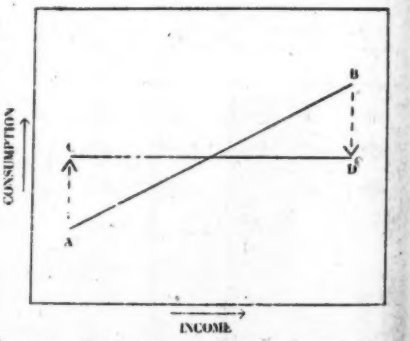

FIG. 6.—Diagram illustrating relation between consumption of more expensive foods and income. AB illustrates how consumption of such foods as meat, milk, eggs, and fruit increases with increasing income when their cost is regulated by "free markets." CD illustrates how consumption is ideally independent of income when foods are subsidized, their price controlled, and they are rationed. Rationing prevents the wealthier people from buying more than their share, so that their consumption falls (B→D). Price control and subsidies allow the poorer people to buy their fair share, so that their consumption rises. (A→C).

a pint of milk a week. Professional people like ourselves would have been consuming a pint of milk a day. We are now complaining when we are allowed only half of this. But this fact that many people are now getting less than before, together with the fact that the total amount of milk being consumed has risen by 40%, must clearly mean that many more people are now getting more than they did before.

It is the absence of this system in many European countries to-day which leads many of us unthinkingly to suppose that food conditions there are better than here. Of course shops can be filled with meat, butter, eggs, cheese, and sugar if the price of these foods puts them beyond the reach of a large proportion of the people. We are told, for example, that the Italians are better off than we are because meat is not rationed. The fallacy of this sort of argument is best seen if we compare this ability to buy as much meat as they like with the average consumption of meat in Italy, which is about one-fifth of that in Britain. These two facts must mean, not that the Italian worker is eating one-fifth as much as the British worker, but that, since more than the average can be and is bought by the wealthier people, the ordinary worker must be getting less than the average—less than one-fifth of British rations. If only one-tenth of the Italian population could afford to buy twice what we call our meagre ration of meat, there would be none whatever left over for the rest of the population.

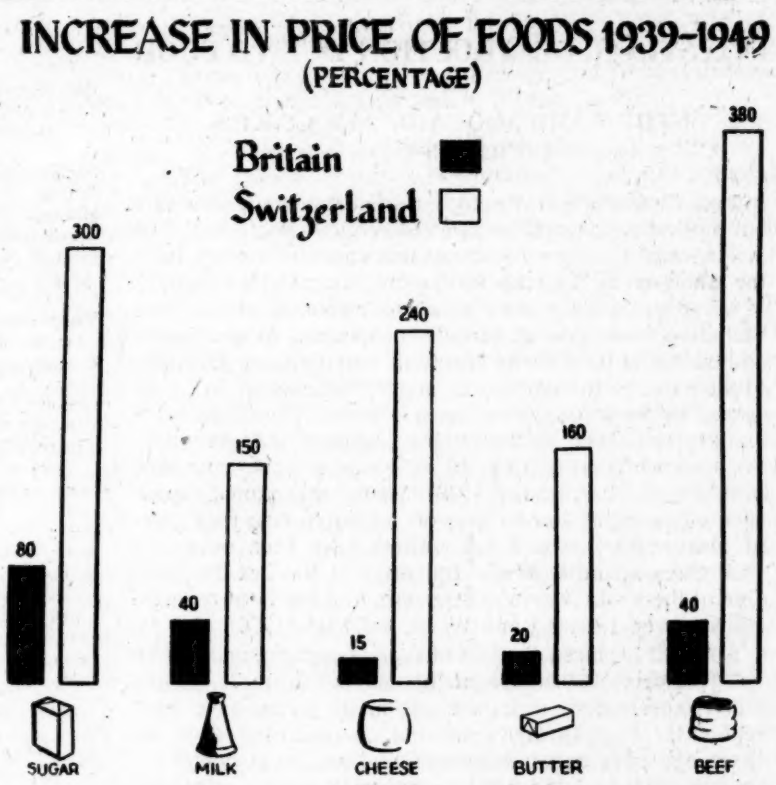

FIG. 8

As another example, we may compare the cost of food before and after the war in Britain and in Switzerland, countries in which earnings are much the same (Fig. 7). The two striking points are the far greater increase in cost in Switzerland since 1939 and the present far greater cost in Switzerland compared with Britain (Fig. 8).

It is surely obvious that without price control and rationing there must be a tremendous differential in the consumption of the more-sought-after foods, so that while some people are getting quite a lot some also are getting very little indeed. It is our system of fair shares in food which, as much as anything else, is responsible for the health of the nation.

A consideration of all these facts seems to lead to only one conclusion. So long as world production and international distribution continue as they are, we must continue with a system of rationing and price control. It is the only moral way in which we can try to ensure a full healthy life for everyone.

The problem of feeding a hungry world is, it is clear, not going to be an easy one to solve. Part of the solution is in our own hands and immediate—a realization, for example, of what is really implied by agitating for the early abolition of rationing. Much of the problem, however, can be solved only by international co-operation to a degree which we have unfortunately never yet reached. But if we mean all we say about the advantages of our type of Western democracy, we mean that our will can find expression in the action of our Government. The formulation of our will in this matter of food and mankind depends on adequate understanding of what faces us. This paper is an attempt to help in this understanding.

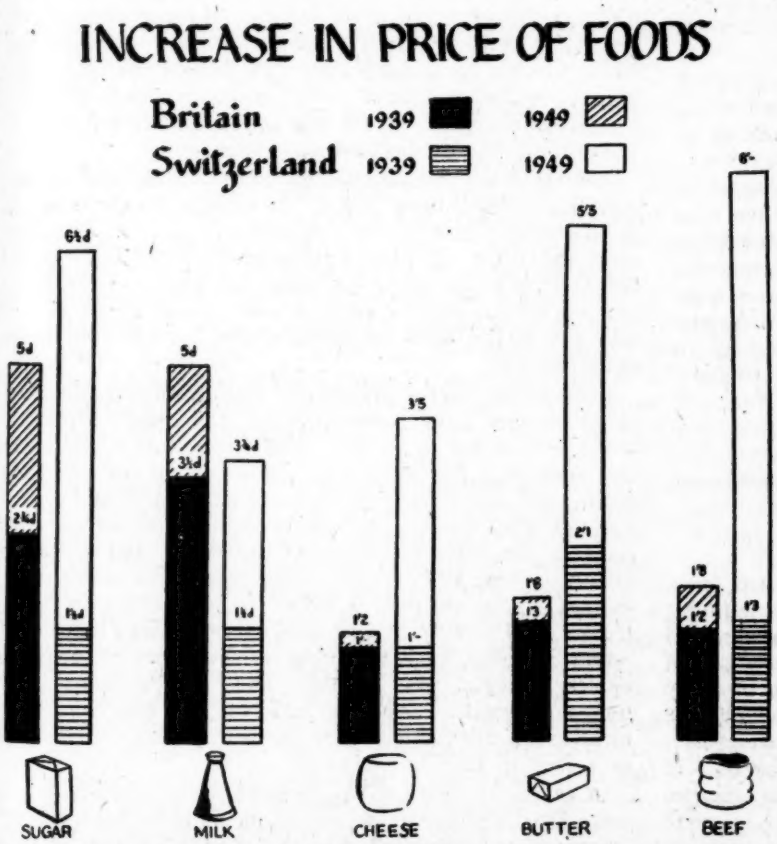

FIG. 7.—*N.B.*—Sterling prices were calculated on the exchange rates ruling in August, 1939, and August, 1949.

INTESTINAL OBSTRUCTION DUE TO FOOD

BY

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Intestinal obstruction due to impacted foodstuffs is a rare but interesting and well-recognized surgical emergency. The incidence of this type of obstruction may be assessed from the analysis by Storck, Rothschild, and Ochsner (1940) of a series of 875 cases of acute intestinal obstruction, excluding those due to herniae, neoplasms, or peritonitis, and treated at the Charity Hospital, New Orleans. Of these, 51 were due to foreign bodies, and of this number five were caused by the impaction of food boluses. Handfield-Jones and Porritt (1948) give the incidence of intraluminal foreign-body obstruction as 0.3% of all cases of acute intestinal obstruction. Latchmore (1940) had the exceptional experience of operating in one year on no fewer than four cases of obstruction due to food. There have been only four such cases at the Radcliffe Infirmary in the last 20 years. One of these was due to orange pith, and has been reported elsewhere by Fleming and Ward-McQuaid (1950).

Elliot (1932) listed 40 cases of food impaction, and Fantus and Kopstein (1940) brought this number up to 75. Since their paper, single instances of small series have been reported. Four further cases are now recorded—two due to orange pith, one to almonds, and one to watercress—so that, including the other case due to orange pith mentioned above, 178 cases have now been traced. Delrio, Paz, and Carpanelli (1944) discussed 31 cases, including 7 of their own; but 13 of these have not been included, as the case histories are not reviewed in full and the relevant original South American publications are not available. It is clear that great numbers of cases occur and are not reported, and perhaps the bizarre examples are more likely to be recorded than those that are less unusual.

Certainly, many foodstuffs have been reported as causing obstruction. In all, no fewer than 45 different obstructing agents have been encountered. In the accompanying list they are given in order of frequency of occurrence.

Obstruction due to the persimmon, the "date-plum" of North America, heads the list with 30 cases, and has been recorded most often from those parts of the United States where persimmons are found. The male predominance has been attributed to the increased consumption of the fruit on hunting trips. The persimmon skin contains shiboul, a cement substance, which is precipitated by the acid in the stomach and agglutinates the seeds and fibres into a type of bezoar called a diosporobezoar. These are not strictly food boluses. Obstruction due to this agent often becomes manifest long after eating persimmons. The subject is well reviewed by Newburger (1941), and is not discussed further in this paper.

Geographical Distribution

The relative incidence of these different impacted foodstuffs varies with the eating habits and economic conditions of the individual and country concerned. A bare recital of the number of times different types of food have caused obstruction gives little idea of the human interest of many of the individual case histories. For example, the case described by Ackman (1939) concerns a choke-cherry-eating competition in which a little Canadian boy of 7 in his enthusiasm swallowed a great number of the cherries whole, some with their stalks, and a few even in small bunches. Before operation coils of small bowel could be felt to be filled with small round hard bodies. He recovered following enterotomy five days after the eating match, of which, although there is no record, he must surely have been the victor. Elliot (1932) describes how an American "hobo" rode for several days in a freight car and, half starved, entered an orange grove, where he consumed some two dozen oranges. He became acutely obstructed, and in spite of enterotomy died two days later.

The increased consumption of coarse foods, and of the so-called "ammunition bread" containing poppy seeds in Germany and Austria after the 1914–18 war, was responsible for many of the cases reviewed by Elliot (1932). Obstruction from eating oats was encountered in Russia, where a similar state of affairs existed at that time. Three-quarters of the cases he collected had occurred in these countries.

Most of the cases of obstruction from fresh and also from dried peaches have been reported from South America, while several due to various dried fruits were recorded in this country a few years ago. Obstruction due to dried fruits, grouped as a whole, and including dried apples, apricots, figs, peaches, and pears, accounts for almost one-third of the cases not included by Fantus and Kopstein (1940). These authors gave mushroom fibres as the commonest single obstructing agent, as did Elliot in 1932. Delrio *et al.* (1944), dealing largely with cases recorded in South America, gave the order of frequency as peaches, apples, oranges, figs, bananas, and, exceptionally, large lumps of meat. There is, however, no case report of meat as an obstructing agent in their paper, nor can one be traced in English literature.

A vegetable foodstuff was responsible for 172 of the 178 cases listed above: in the remaining six cases the obstructing agent was grasshoppers in two, and fish scales, chicken skins, turtle eggs, and bone (with peanuts), in one each.

List of Obstructing Foodstuffs

The 45 obstructing foodstuffs are given in order of frequency, including those now reported. The small numerals indicate the 44 authors not included by Fantus and Kopstein (1940) who are listed in the Appendix.

	No. of Cases
Persimmons 22, 36	30 (not true food boluses)
Peaches 6, 10, 13, 14, 16, 26, 30, 42	18 (10 dried)
Oranges 1, 2, 7, 14, 17, 18, 29, 31, 38	16
Mushrooms	9
Bran 25, 35	8 (3 doubtful)
Apples 3, 11, 31, 32, 33, 37	7 (3 dried)
Figs 14, 19	7
Unspecified fruits 9, 33	6 (4 dried, 2 baked)
Cherries 31 (some including stones)	6
Grapes	6
Beans 1	5
Coconut 31, 35	3
Potatoes 11	3
Apricots 28, 40	3 (1 dried)
Carrots 44	3
Ammunition bread ("Kriegsbrot")	3
Oats	3
Pears	3 (2 dried)
Water-melons 5, 43 (including seeds)	3
Almonds 31	2
Cucumber	2
Gooseberries	2
Grasshoppers ("Sauterelles")	2
Peanuts 31, 43	2
Poppy seeds	2

One each of: banana 41, bones and peanuts 4, butter beans 43, cantaloup 23, chicken skins 34, fish scales, fruit and peas, garlic bulb 12, green corn 41, lettuce leaves 8, orange and seeds, popcorn, poppy seeds, peas and beans, potato and peas, radish and garlic, raisins, sweet potato 43, prunes, sauerkraut, turtle eggs 39, and watercress.

The mention of obstruction from celery 27, collards, or coleworts, which resemble cabbages but have no heart 18, has been encountered, but no actual reference traced.

Calevaert (1933) encountered the patients who were obstructed by the grasshoppers (translated as "locusts" by Fantus and Kopstein, 1940) in the Belgian Congo. He adds a gastronomic note on the way this dish should be prepared, explaining that these two patients ate the grasshoppers whole, unfortunately with fatal results.

The turtle eggs were consumed whole at a picnic in Ohio while the victim was in a state of intoxication (Rambo *et al.*, 1939). These eggs are considered edible, but they have a thick membranous covering and are often 3 cm. in diameter. The majority of cases of obstruction due to orange pith were encountered in this country or in the United States. It is of interest that 4 of the 16 impactions occurred in patients who had previously had a radical operation for peptic ulceration. Two cases of obstruction by watermelons and one by sweet potatoes were reported from New Orleans (Storck *et al.*, 1940, and Anderson and Anderson, 1930). Impaction of a garlic bulb was reported from Poland by Ciechanowski (1938).

Predisposing Factors

The majority of obstructing foodstuffs are those rich in fibre, desiccated fruits which swell as they take up water, or substances resistant to the digestive juices. The foods are often uncooked, and in the case of fruits sometimes unripe. In many cases only a small quantity of the obstructing foodstuff is taken, but sometimes the amount ingested is excessive. Mastication is often absent or inefficient, either because the patient is edentulous or because he has bolted the meal. Sometimes the food is taken on an empty stomach and squeezed together into a bolus in the small intestine : symptoms are then precipitated by the next meal. At other times an excessive fluid intake dilutes the digestive juices or causes desiccated fruits to swell.

The patient may have had previous similar but less severe attacks, and Caylor and Nickel (1936) report a case in which the ileum of the same patient was obstructed first by parts of apples, with recovery, and later by what was probably raw potato, with a fatal outcome.

Impaction is most common where the ileum is at its narrowest, some 100 cm. from the ileocaecal valve. The bowel at this site is almost always healthy, but impaction may occur anywhere in the intestine, at the site of a benign or a neoplastic stricture. Occasionally the site of obstruction is in healthy jejunum or in large bowel, particularly the rectum. All age groups may suffer from obstruction due to foodstuffs, and the age factor does not seem to be of importance except when associated with an atonic intestine. Constipation due to excessive dehydration is a further possible predisposing cause in large-gut obstruction. Faecal impaction is of course not uncommon in the rectum of the aged, debilitated, or paralysed, but this is another matter.

Impaction of food in the small intestine has on four occasions been reported as following a Polya type partial gastrectomy. Two of these patients suffered from "dumping" symptoms. The obstructing agent was orange pith in those two (Baumeister and Darling, 1947 ; Fleming and Ward-McQuaid, 1950), and also in one other (Allen and Smithwick, 1942), while impaction of sauerkraut had occurred in the case described by Seifert (1930). Orange-pith obstruction followed gastro-enterostomy in one of the cases recorded by Delrio *et al.* (1944). The stoma allowed the bolus to pass freely into the jejunum of these patients.

It would be interesting to know if any examples of this type of obstruction have followed the Mohammedan practice during Ramadan of fasting from sunrise to sunset, and also whether the dehydrated or concentrated foods, other than dried fruits, prepared during the last war ever gave rise to intestinal obstruction.

Impaction in animals is not uncommon, and is discussed by Wooldridge (1934) and by Grieg (1946).

Clinical Features

The clinical features of intestinal obstruction due to foodstuffs in man have been well described by many authors, including Elliot (1932) and Latchmore (1940), the latter of whom uses the expressive term "bolus colic" in describing this condition. Brunzel (1918) used the term "food ileus." Many subacute cases recover and are dismissed with diagnoses such as "green-apple colic." It is likely that some cases of "food-poisoning" and many cases of "stomach-ache" are also examples of this condition.

There is often a history of a variation from the normal diet, frequently associated with one of the predisposing causes already discussed. There may have been a previous similar but milder attack. The time of onset after ingesting the obstructing agent is very variable, but when the impaction occurs in the small intestine it is generally of the order of a few hours. Signs and symptoms characteristic of intestinal obstruction appear.

Obstruction due to foodstuffs should be considered when some of the predisposing factors mentioned above are present, especially if the distension is out of proportion to the duration of the obstruction, the constitutional reaction is mild, and there are no signs of peritonitis. Occasionally the loop of intestine containing the impacted bolus may be palpable. Appendicitis may be simulated, as may carcinoma of the colon or rectum when the site of obstruction is in the large bowel.

In late cases the clinical picture is of progressive intestinal obstruction with severe vomiting, dehydration, distension, and rapid deterioration of the general condition. Peritonitis may occur with or without perforation.

Treatment

If the condition is diagnosed before operation, conservative treatment in the form of intestinal decompression, parenteral fluid, antispasmodics, and enemata may be tried. In the absence of improvement in small-bowel obstruction, however, operation must not be long delayed. Enemata are most likely to be successful in large-bowel obstruction, but manual evacuation may sometimes be needed.

In most cases the diagnosis is not made until the abdomen has been opened. The site of impaction is usually found to be in the lower ileum, and the affected loop is often red, engorged, and oedematous. The obstructing bolus can frequently be broken up and "milked" away into the caecum, but more often an enterotomy is necessary. Storck *et al.* (1940) consider that enterotomy is the treatment of choice, regarding the "milking" process as likely to produce paralytic ileus. Frank (1936), who had a death from peritonitis after enterotomy due to thrombosis of the intestinal vessels in a 4-day-old obstruction, and a success after a resection in a case of 24 hours' duration, stated that he would again perform a resection if he encountered a similar case. Covaro and Nunziata (1939), who had four consecutive fatalities, consider that a Miller–Abbott tube should be used as a routine after operation in order to circumvent the dangers of ileus.

The prognosis clearly depends on the duration of the obstructive symptoms and the condition of the patient : the majority of the cases recently recorded have been treated successfully. The fatality rate of 47.8% in the cases operated on in the series collected by Elliot (1932) shows that the condition is a serious one.

Case 1.—Impaction of Almonds in Healthy Lower Ileum

A woman aged 31 was admitted to the Radcliffe Infirmary in August, 1949, suffering from colicky abdominal pains of 10 hours' duration. She had never had a similar pain, and there was no relevant previous history.

After an early breakfast at 5.30 a.m. she had spent the greater part of the day of admission travelling by car to Oxford from the North. She had some coffee and a scone at 9 a.m., and at 11.30 a.m. ate about a score of almonds. These were not chewed well, because she was driving, and one or two of them were bad and were swallowed quickly, followed by others chewed hastily to take the bad taste away. Some two hours later she noticed mild colicky abdominal pains, but she enjoyed a large lunch soon after. The pains became more severe after this meal, and by early evening she was doubled up when she had the pains. She did not eat again that day. She felt sick but did not vomit. Her bowels were not moved during the day, and she passed no flatus after the onset of the pains.

On examination her temperature was 98.4° F. (36.9° C.) and pulse 88. Her general condition was good. She had good teeth and her tongue was slightly furred. The abdomen was slightly distended and moved on respiration. There was some guarding below the umbilicus, more pronounced on the right side, but no release tenderness. Rectal examination revealed tenderness in the midline anteriorly. The most likely diagnosis was obstructive appendicitis with the organ directed medially and downwards.

Operation.—Under general anaesthesia the abdomen was explored by a right lower paramedian incision. On opening the peritoneum distended coils of small bowel presented and much clear free fluid escaped. The appendix was long and retrocaecal, but not inflamed. The terminal ileum was collapsed. The site of obstruction was found some 150 cm. from the ileocaecal valve. The bowel was bright red for some 45 cm. and was distended to over 5 cm. in diameter above a bolus obstructing its lumen. The obstructing agent was a pultaceous mass 5 by 10 cm. made up of hard white particles, some of them 1.2 cm. long, and resembling the almonds she had eaten so hastily about 11 hours previously. The bolus was "milked" down to the ileocaecal valve. Appendicectomy was performed and the wound closed in layers with nylon. Convalescence was uneventful.

Case 2.—Impaction of Orange Pith in Healthy Terminal Ileum

A man aged 71 was admitted to St. Giles' Hospital, Camberwell, in March, 1936, suffering from colicky abdominal pain of 12 hours' duration. There was no relevant history. On the day previous to admission he had eaten his "high tea" between 5 and 6 p.m. and rounded off the meal with an orange, which was swallowed quickly. He was awakened in the middle of the night by severe intermittent colicky central abdominal pain. The pain became progressively more severe, and he vomited several times. His bowels had been opened the previous day, but not since the onset of the pain.

On examination his temperature and pulse were within normal limits and his general condition was good. His teeth were inadequate for proper mastication and his tongue was furred. The abdomen was slightly distended and moved on respiration. During the examination the patient was seized with a severe bout of colicky pain, and visible peristalsis of the small bowel was seen through the thin abdominal wall. There was fullness, and a palpable mass in the right iliac fossa. This mass was dull to percussion and measured 7.5 by 7.5 cm. No abnormality was found on rectal examination. A diagnosis of acute intestinal obstruction was made, and a carcinoma of the caecum was thought to be the cause.

Operation.—The abdomen was explored by Mr. A. Elliot-Smith through a right lower paramedian incision. On opening the peritoneum clear fluid escaped and distended small bowel presented. The obstructing agent was found firmly impacted about 90 cm. from the ileocaecal valve, and measured 5 by 7.5 cm. The dilated bowel above the obstruction was lilac-coloured, in contrast to the normal colour of the collapsed bowel distal to the impacted bolus. An enterotomy was performed, the pith from the two halves of an orange was removed, and the bowel closed with two layers of catgut sutures. The bowel above the site of the previous obstruction now regained its normal colour. The mass in the right iliac fossa was found to be a solitary cyst attached to the lower pole of the right kidney. Convalescence was uneventful.

Case 3.—Impaction of Orange Pith at the Site of Kinking in the Jejunum

A chambermaid aged 45 was admitted to the Radcliffe Infirmary under the care of Mr. D. A. Abernethy one evening in October, 1935. She had been well until that morning, when she had been seized by a severe intermittent colicky pain in the left loin and to the left of the umbilicus. She vomited once. The pains lasted three-quarters of a minute and came on every 10 minutes, causing her to roll about in an effort to get relief. Lying on her right side eased the pain. She had some frequency of micturition, and her bowels had opened normally that morning, but not since the pains began. After a time the pain moved to the left iliac fossa. There was no history of a previous attack, and no relevant previous history.

On examination her temperature was 98° F. (36.7° C.) and pulse 96, and her general condition was good. During attacks of pain she screwed up her face and rolled about. Her abdomen was not distended, and there was some guarding but no rebound tenderness in the left iliac fossa. There was tenderness in the left loin. A diagnosis of left ureteric colic was made. A specimen of urine was examined, but was found to be normal.

The pains continued, and she vomited occasionally. Next evening, 24 hours after admission, she did not look so well. The pulse was steady, but there was some lower abdominal distension, especially on the left side. A diagnosis of small-intestine obstruction was made.

Operation.—The abdomen was explored by Mr. A. J. Grace through a left paramedian incision. There was much free straw-coloured fluid, and the upper jejunum was distended. The two limbs of a jejunal loop were found to be bound together by veil-like adhesions so that the bowel was acutely kinked and its lumen narrowed. A bolus was impacted on the proximal side of this kink, and was found on removal to consist of orange pith. The adhesions were divided, and an entero-anastomosis was performed. Recovery was uneventful.

Case 4.—Impaction of Watercress in Healthy Lower Ileum

A housekeeper aged 69 was admitted to the Radcliffe Infirmary in February, 1935, suffering from colicky abdominal pain and vomiting of three days' duration. The pain was at first to the left of the umbilicus, but later became generalized and more severe. Vomiting followed and became persistent. The patient's bowels had not been moved since the onset of symptoms, though they had previously been regular. On the day of admission she was vomiting everything taken by mouth.

On examination her temperature was 99° F. (37.2° C.) and pulse 80. Her general condition was good. There was no distension of the abdomen or any tenderness; no masses were felt, and rectal examination was normal. A radiograph showed no abnormality, but an occult blood examination of the stools was positive.

The patient was observed for two days, but her symptoms did not subside and it became evident that she was suffering from acute intestinal obstruction.

Operation.—The abdomen was explored under general anaesthesia by Mr. D. A. Abernethy through a midline subumbilical incision. The small bowel was distended, and the obstructing agent was found in the lumen of the lower ileum. Enterotomy was performed and a mass some 5 cm. in diameter was removed. It consisted of fibres and faeces, and in texture resembled a loofah. Dissection of the bolus showed that it was made up of the stems and leaves of watercress rolled up and encrusted with faeces. After operation she said that she had eaten a large quantity of watercress at tea the day before her pains began. Convalescence was uneventful.

Comment

These four case histories illustrate many of the features of this type of intestinal obstruction. Orange pith is a relatively common obstructing agent, and, while one case of obstruction due to almonds is already to be found in the literature (Latchmore, 1940), watercress (as in Case 4) has not previously been recorded as the obstructing foodstuff. In both Case 1 and Case 2 mastication was inadequate.

Summary

The great variety of foodstuffs reported to have caused acute intestinal obstruction are listed in order of frequency. In all, 178 cases were traced and obstruction was found to be due to 45 different agents. Of these, persimmons, peaches, oranges, mushrooms, bran, apples, figs, cherries, and grapes were the most frequent, in that order, and accounted for more than one-half the obstructions. Dried fruits accounted for almost one-third of the cases reported in recent years.

The geographical distribution, predisposing factors, clinical features, diagnosis, treatment, and prognosis of this condition are outlined. Oranges appear to be the most common obstructing agent in this country.

Four further cases are reported. Two of these were due to orange pith, one to almonds, and one to watercress: three impactions occurred in healthy lower ileum, and one at the site of an organic stenosis in the jejunum. The almond bolus was broken up and "milked" into the caecum, but enterotomy was necessary in the other three cases. All four patients recovered uneventfully.

I am indebted to Mr. D. A. Abernethy, Mr. A. Elliot-Smith, and Mr. A. J. Grace for permission to publish their cases.

APPENDIX

Alphabetical list of 44 authors not referred to by Fantus and Kopstein (1940), together with the obstructing foodstuff concerned.

[1]Aird, I. (1949). *A Companion in Surgical Studies.* Livingstone, Edinburgh.—Beans, orange.
[2]Allen, A. E., and Smithwick, R. (1942). *New. Engl. J. Med.*, **226**, 864.—Orange.
[3]Alsen, P. (1938). *Nord. med. Tidskr.*, **16**, 1165.—Dried apple.
[4]Altman, G. G. (1931). *Kentucky med. J.*, **29**, 370.—Bone and peanuts.
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INTRAVENOUS IRON IN THE TREATMENT OF ANAEMIA

BY

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It is not uncommon to see patients suffering from a microcytic hypochromic anaemia at hospital out-patient departments who have had oral iron therapy for months or years without benefit.

Excluding those cases in which diseases and deficiencies are present which could account for the continued anaemia, a considerable proportion of cases remain. These include: (1) those who have not tolerated iron in the dosage advised by the general practitioner, and who have failed to take any quantity of the preparations ordered; (2) those who seem unable to tolerate even the smallest doses of iron preparation given by mouth; and (3) those who seem unable to absorb adequate quantities of iron, the response to oral therapy falling far short of expectations. While many patients in Group 1 will tolerate a reduced dose of iron and obtain a satisfactory result, those in Groups 2 and 3 constitute a problem of introducing enough iron into the body to effect a cure.

Goodman and Gilman (1941) have shown that a healthy adult has 150 g. of circulatory haemoglobin containing 2.5 g. of iron. In an anaemic patient 25 mg. of iron must therefore become available to allow a rise of 1% haemoglobin.

Powell (1944) considers that one of the factors in iron absorption may be the permeability of the absorbing cells to iron. In her experience, resistance to treatment by iron in hypochromic anaemia is usually due to a failure of absorption, and it may be this factor of permeability of absorbing cells that is at fault. If that is so parenteral administration may be necessary to introduce sufficient iron into the body.

Parenteral Administration

It has long been known that the body can utilize preparations of iron when administered by injection. Stockman (1893), with subcutaneous injections of citrate of iron and sodium, recorded a pronounced rise in erythrocyte count and haemoglobin level in four cases of chlorosis. It has also been shown that injected iron is used almost quantitatively for the formation of haemoglobin (Heath *et al.*, 1932; Whipple and Robscheit-Robbins, 1936; Hahn and Whipple, 1936; Goetsch *et al.*, 1946).

Unfortunately, even quite small doses of most preparations produce toxic effects. Goetsch *et al.* (1946) concluded that injecting colloidal ferric hydroxide or ferric oxide intravenously produced toxic effects too severe for this preparation to be of practical use. To avoid toxic effects the maximum dose of injectio ferri *B.P.* (intramuscular) is 2 ml., with an iron content of 7 mg. To raise the haemoglobin 50% would therefore require daily injections for six months.

Cappell (1930), in animals, had noticed that with saccharated oxide of iron there is no flocculation of the iron solution in contact with the blood plasma, and that mice and rats could be given repeated small injections to a total of seven to eight times the normal body content of iron without ill effects. A great advance in the problem of parenteral administration in man was made by Nissim (1947). He found that a practical dose of saccharated iron oxide could be administered without reactions, and that it was completely utilized in haemoglobin synthesis. Davidson and Girdwood (1948) confirmed the effectiveness of this preparation in one case, though they reported "marked reactions" with some of the injections as well as "severe reactions" in other cases. Slack and Wilkinson (1948) mentioned that they had been using saccharated iron in out-patients with "entirely satisfactory results."

Many cases of microcytic hypochromic anaemia have been treated at the Royal Victoria and Musgrave Park Emergency Hospitals, Belfast, with saccharated oxide of iron, using the proprietary preparation "ferrivenin," with most gratifying haematological results.

As it is intended to follow up these cases for some time full details are not being recorded at the moment. The reports of Slack and Wilkinson (1949) have been confirmed, the following case histories being typical of the responses obtained.

Illustrative Cases

Case A.—A married woman aged 30 had had six months' treatment with oral preparations of iron by mouth, at the end of which her blood findings were: Hb, 6.64 g./100 ml. (45% Haldane); erythrocytes, 4,090,000; C.I., 0.56; slide—microcytosis, hypochromia, no primitive red cells. Two months later—still on oral iron—the blood findings were: Hb, 6.96 g./100 ml. (47% Haldane); erythrocytes, 4,040,000; C.I., 0.53. Two weeks later oral iron was discontinued and she was given iron intravenously. There was a pronounced clinical improvement, and the haemoglobin and erythrocyte count rose (Fig. 1). A fractional test meal had shown achlorhydria, not histamine-fast.

Case B.—A married woman aged 24 had a long history of anaemia. She was not able to tolerate ferri et ammon. cit., and

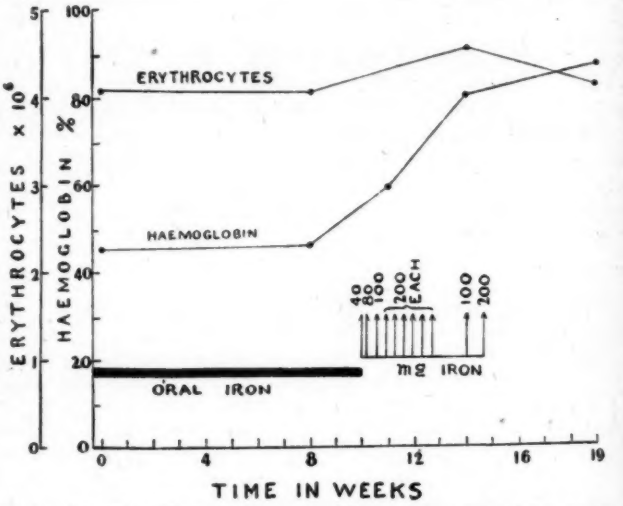

FIG. 1.—Case A. No response to oral iron; response to intravenous iron.

there was no response to tab. ferri sulph., which finally made her sick. At this stage blood examination showed: Hb. 5.9 g./100 ml. (40% Haldane); erythrocytes, 2,640,000; C.I., 0.73; haematocrit, 20%; M.C.V., 76 μ^3; M.C.H.C., 30%; slide—hypochromia, anisocytosis. Primitive red cells 1 per 100 white cells—normoblast type (c) 1. Oral preparations were discontinued and she was given iron intravenously. There was a pronounced clinical improvement, and the haemoglobin and erythrocyte count rose (Fig. 2).

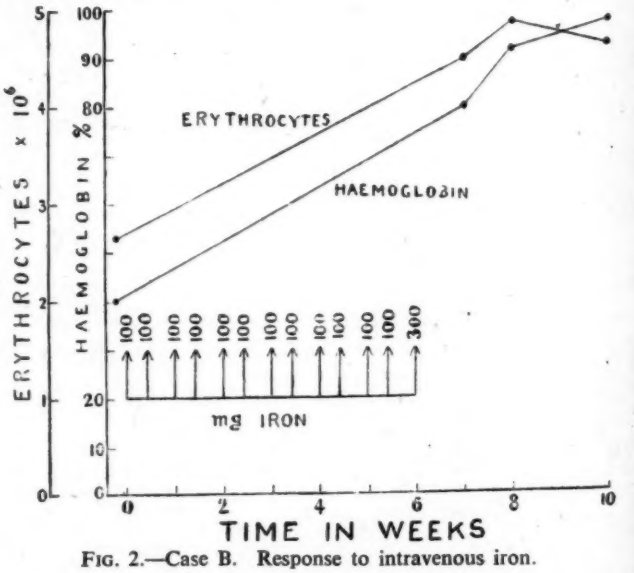

FIG. 2.—Case B. Response to intravenous iron.

Case C.—A married woman aged 49 had a 14-years history of anaemia. She failed to respond to ordinary treatment. Blood examination showed: Hb, 4.14 g./100 ml. (28% Haldane); erythrocytes, 1,940,000; C.I., 0.73; haematocrit, 15%; M.C.V., 78 μ^3; M.C.H.C., 27%. Bone marrow showed maturation arrest of the late type of normoblasts (type C). These cells showed a pyknotic nucleus with rugged immature cytoplasm typical of an iron-deficiency anaemia. A fractional test meal had shown free acid. Iron intravenously produced a great clinical improvement and a rise in haemoglobin and the erythrocyte count (Fig. 3). Iron was not given by mouth from the time of the above blood and marrow examinations.

Massive Dosage

Nissim had shown in five cases that by increasing the dosage over a series of injections a 500-mg. dose of saccharated oxide of iron produced no reaction in three cases

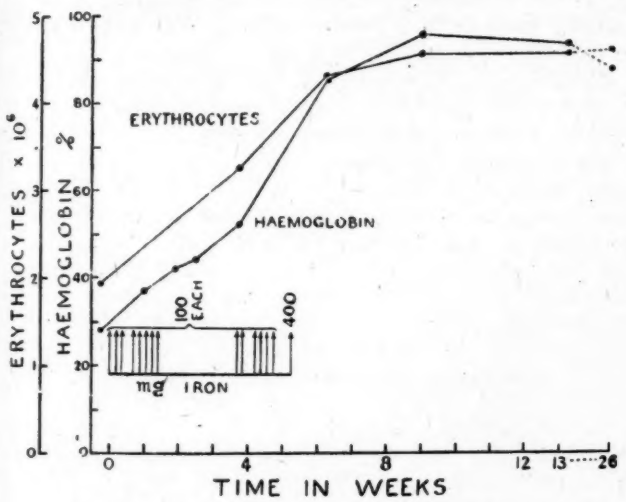

FIG. 3.—Case C. Response to intravenous iron.

and only a very doubtful reaction in the fourth. The fifth patient had a slight reaction after the first of two 250-mg. doses and a moderate reaction after 500 mg. Five other patients were given initial dosage of 200 mg., 250 mg., 400 mg., 500 mg., and 500 mg. without reactions. A sixth patient, given an initial 1 g. of iron, developed a moderate reaction which responded quickly to treatment.

The material Nissim used was prepared in his own hospital, so that chemical characteristics of the solution might not have been constant. It was therefore decided to investigate the possibility of giving anaemic patients the total required amount of the standard preparation ferrivenin at a single injection. Such a procedure would have many advantages—for example, (1) the avoidance of repeated attendances at out-patient departments; (2) defaulters due to fear of repeated injections would be eliminated; and (3) where veins were difficult to find, one successful venepuncture would avoid the possibility of future failures to enter a vein, etc.

Haematological Findings Before and After Massive Intravenous Injections of Ferrivenin

Case No.	Ferrivenin (mg. Metallic Iron) and Day of Injection	Day from First Injection*	Hb mg./100 ml. (% Haldane)	R.B.C. (Millions)	P.C.V.	M.C.V. μ^3.	M.C.H.C.
1	Day 1–300	0	11·18 (75%)	4·19	38%	90	30%
	,, 8–300	22	13·74 (93%)	4·44			
		36	13·59 (92%)	4·49			
2	Day 1–400	0	8·88 (60%)	3·99	30%	77	30%
	,, 8–400	43	14·04 (95%)	4·52			
	,, 15–200	127	14·7 (99%)	5·02			
3	Day 1–400	0	7·99 (54%)	3·85	29%	78	27%
	,, 22–400	43	12·28 (83%)	4·67			
	Refused further injections						
4	Day 1–400	0	7·69 (52%)	4·02	30%	75	26%
	,, 8–400	36	12·13 (82%)	3·75			
	,, 15–200	120	13·44 (91%)	4·6			
	,, 22–200						
	,, 29–200						
5	Day 1–400	0	8·44 (57%)	3·76	28%	76	30%
	,, 38–600	21	10·65 (72%)	4·36			
	,, 91–200	91	12·3 (83%)	4·2			
		141	13·74 (93%)	4·16			
6	Day 1–500	0	11·55 (78%)	4·42	44%	100	25%
		53	15·39 (104%)	4·74			
		196	14·8 (100%)	5·0			
7	Day 1–500	0	7·69 (52%)	3·56	31%	88	24%
	,, 8–100	15	10·5 (71%)	4·6			
	,, 15–100	36	12·3 (83%)	4·54			
	,, 22–200	43	15·24 (103%)	5·25			
	,, 29–300						
8	Day 1–600	0	9·02 (61%)	4·3	34%	80	27%
	,, 49–400	22	9·47 (64%)	4·46			
		155	10·4 (70%)	5·25			
9†	Day 1–700	0	10·95 (74%)	4·18	36%	87	32%
		57	12·73 (86%)	4·26			
10	Day 1–800	0	4·4 (30%)	2·96	19%	66	22%
	,, 6–100	14	9·62 (65%)	3·6			
	,, 7–100	35	10·9 (74%)	4·55			
	,, 12–300	42	15·39 (104%)	4·77			
	,, 15–300						
	,, 22–100						
11	Day 1–900	0	9·47 (64%)	4·02	32%	80	30%
		36	13·9 (94%)	4·8			

* Day 0 = Few days before first injection, Day 1 = Day of first injection.
† Menorrhagia undisclosed at first examination probably reduced haematological response.

New cases of microcytic hypochromic anaemia due to pure iron deficiency were taken without selection as and when they were diagnosed at out-patient departments. Without preliminary test doses they were treated as under. (Haematological findings are shown in the accompanying table.)

Case Reports

Case 1.—A nurse aged 28 was given 300 mg. of metallic iron in 2% solution (15 ml. of ferrivenin) by slow intravenous injection. Severe pain developed along the course of the vein up to the shoulder; she became pale and felt faint, but quickly recovered. Four hours later she felt cold and had rigors, became dizzy, and had difficulty in standing upright. She developed headache and nausea, and vomited slightly. Next morning she felt somewhat weak for a few hours. One week later a further 300-mg. dose was given without any reaction.

Case 2.—A woman aged 39 took 400 mg. of iron and within a few minutes developed pain in both lumbar areas and in the front of her thighs. She broke out in a sweat, but quickly recovered. Several hours later nausea, vomiting, and weakness developed, which lasted several hours. One week later a further 400 mg. was quickly followed by nausea, coldness, and weakness. This reaction responded quickly to brandy and warmth. One week later 200 mg. (remainder of calculated requirement) was given without reaction.

Case 3.—A woman aged 27 received 400 mg. of iron. Several hours later she felt weak, developed nausea, and vomited for several hours. She had anorexia and remained in bed for two days. Three weeks later a further 400 mg. was given, and one and a half hours later she had a rigor, developed a headache and nausea, and vomited for half an hour. She remained in bed for 24 hours.

Case 4.—A woman aged 44 was given 400 mg. of iron which caused a pain along the course of the vein up to the shoulder while the injection was in progress. This was followed by a feeling of heat all over the body, an irritation in the throat which made her cough, and slight pain in both thighs. She recovered quickly. One week later she had another 400 mg., and three further weekly injections of 200 mg. were given, all without reaction.

Case 5.—A woman aged 49 took 400 mg. of iron and one hour later had nausea, vomiting, and diarrhoea, and developed a generalized urticaria which lasted for 12 hours. One week later she was given 600 mg. of iron, and later a further 200 mg., with no ill effects.

Case 6.—A woman aged 52 took 500 mg. of iron without any immediate or late toxic reactions.

Case 7.—A girl aged 16 was given 500 mg. of iron, which caused severe pain along the vein up to the shoulder while the injection was in progress. One hour later pains developed all over the stomach and in both lumbar regions. She had rigors, nausea, and vomiting for two and a half hours and felt lightheaded, but five hours after injection she was perfectly well. The vein thrombosed at the site of injection. The remaining iron in smaller doses caused no reaction.

Case 8.—A youth aged 19 was given 600 mg. of iron. Five hours later he developed tightness in the chest, sweated, had nausea, and felt weak for several hours. Later he took 400 mg. without reaction.

Case 9.—A woman aged 33 took 700 mg. of iron and one hour later developed nausea and vomiting. She had rigors and

her skin felt tight all over her body. The reaction lasted 12 hours, but she remained in bed for 48 hours.

Case 10.—A woman aged 41 took 800 mg. of iron and one and a half hours later she felt dizzy and developed nausea, epigastric pain, and vomiting. She had rigors and her temperature rose to 103° F. (39.4° C.). Five hours after the injection she felt well again, and her temperature returned to normal. The vein later thrombosed at the site of injection, causing a localized discomfort for a few days. The remaining iron was given in smaller dosage without reaction.

Case 11.—A nurse aged 21 received 900 mg. of iron without any immediate reaction. One hour later she suddenly developed severe pain in her arms, legs, feet, back, and abdomen, and developed severe nausea and vomiting. She was admitted to hospital in a collapsed condition, grey-coloured. Her pulse could not be felt at the wrist, and there was pronounced tenderness over all areas of the abdomen, with rigidity and a positive rebound reaction. Auscultation of the abdomen revealed normal peristalsis. Rectal examination was painless. The condition in many ways resembled a perforation. She was treated with warmth, brandy (which was vomited), and "omnopon" intravenously. Two hours later her pulse could be felt at the wrist, her B.P. was 90/50, and there was much less vomiting. The following day she was very much better, and at the end of 24 hours had no symptoms.

Discussion

Patients suffering from a microcytic hypochromic anaemia without any other clinically demonstrable pathological feature who fail to respond to oral preparations of iron supplemented with vitamins, liver, thyroid, etc., have in the past remained in a state of chronic ill-health or required repeated blood transfusions to become symptomless.

These patients will respond dramatically to intravenous saccharated oxide of iron. After several doses of 100 mg. daily, or at any longer interval if more convenient, the dosage can gradually be increased to 200 mg. and 300 mg. if desired, with very little danger of any toxic side-effects. Unfortunately the total amount of iron required will not be tolerated by patients without prohibitive toxic reactions if given by single injection. Antihistamine drugs were used for some patients without preventing or reducing the toxic reactions.

However, a full course always consists of fewer than 10 injections and is the treatment of choice in refractory iron-deficiency anaemia. It is the most convenient method of treating patients who are unable to tolerate oral preparations of iron and is especially useful in pregnancy and the puerperium when gastric upsets are common and a rapid response is desirable (French, 1948; Govan and Scott, 1949). It has been found useful in chronic ulcerative colitis, idiopathic steatorrhoea, and rheumatoid arthritis (Sinclair and Duthie, 1949) associated with iron deficiency. As the iron cannot be replaced by a single injection, oral administration still remains the best method in the majority of cases of secondary iron-deficiency anaemia.

Cappell (1930) studied the fate of saccharated oxide of iron injected into mice. Like other insoluble suspensoids, iron oxide is taken up by the reticulo-endothelial cells lining vascular channels, mainly in the liver and spleen, being completely removed from the plasma within 24 hours.

Vannotti (1946) and Greenberg *et al.* (1947), using radio iron, found that in anaemic animals and patients most of the iron is removed from the plasma within a few hours. Cappell showed that the reticulo-endothelial cells, by their metabolic activity, converted the finely particulate nature of the iron into a soluble iron which was released into the blood plasma. This soluble iron is in loose combination with the plasma proteins and is capable of passing through capillary walls to be stored in the lymphatic nodes and the parenchyma cells of the liver and kidney.

Wintrobe *et al.* (1947) showed that this soluble iron could be converted into haemoglobin, appearing as early as 48 hours after the administration of iron.

The cause of the toxic reactions that occurred in the cases described in this paper is still in doubt. Goetsch *et al.* (1946) found similar reactions with different preparations and thought them to be due to a heavy-metal effect. The pain felt along the course of the vein while the injection is in progress is probably due to venospasm. It occurred in one patient on the needle entering the vein and lasted for several minutes until the needle was withdrawn, although nothing was injected. Govan and Scott had somewhat similar experiences. The immediate reactions occasionally seen were all mild, and occurred only in apprehensive patients. Of the late reactions, the resemblance of the symptoms to those that occur in patients with paroxysmal haemoglobinuria from cold (Whitby and Britton, 1946) is very striking, and may well be caused by sudden increased activity of the cells of the reticulo-endothelial system. If this is the cause of the symptoms in both conditions—even though the nature of the injected iron is probably different from the iron released from haemoglobin breakdown—it is unlikely that any preparation of iron will be found which would allow treatment of anaemic patients by single rapid injection.

Summary

Intravenous iron therapy is now a practical method of treating microcytic hypochromic anaemia and is the method of choice for patients unable to tolerate iron given orally or in cases of refractory iron-deficiency anaemia.

Toxic reactions are avoided when the dosage begins with 100 mg. of saccharated iron oxide and is increased slowly to 200 or 300 mg.

Severe toxic reactions occur when attempts are made to replace the requirements of iron by a single intravenous injection. These reactions are described in detail.

The toxic effects closely resemble the symptoms of paroxysmal haemoglobinuria caused by cold. A possible explanation of these reactions is postulated.

I wish to thank Dr. M. G. Nelson, who carried out most of the haematological examinations.

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RESPIRATORY OBSTRUCTION FROM FRACTURES OF THE JAW

BY

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It is proposed to discuss those types of fractures of the jaw which occur in civil practice and which are apt to give rise to respiratory obstruction of such a degree as to jeopardize the patient's life. From my experience of the difficulties of dealing with these cases I feel that a number of patients must succumb long before they reach a special unit. This has prompted me to put forward a simple method of overcoming the obstruction, in the hope that it may be of some assistance to those who first have to deal with such cases.

During the past two years 189 cases of fractured jaw, excluding those of malar or zygomatic bone, have been treated at this unit, and 10 of these suffered from a severe degree of respiratory obstruction. The majority resulted from road accidents; thus it may well fall to the lot of any medical man to deal with this type of case.

Types of Fracture

For the purpose of discussion the fractures will be referred to as Types 1, 2, 3, 4, and 5.

Type 1.—This type is commonly referred to as a fracture of the middle third of the face. When associated with a backward and downward displacement of the middle third, respiratory obstruction may result. A possible explanation for the cause of obstruction is that the hard palate, which is displaced with this middle third, carries with it the soft palate, which is thus approximated both to the posterior pharyngeal wall and to the base of the tongue. This, associated with the haemorrhage and oedema invariably present, results in respiratory obstruction. This type often involves the anterior fossa of the skull.

Type 2.—When the tooth-bearing fragment carrying the hard palate is displaced backwards the soft palate is approximated to the posterior pharyngeal wall and the base of the tongue, so that the mechanism producing the obstruction is as in Type 1.

Type 3.—When the anterior fragment of the mandible to which the tongue is attached is displaced downwards and backwards the tongue is also allowed to drop in the same direction, so that its base comes in contact with the posterior pharyngeal wall. This results in severe respiratory obstruction.

Type 4.—In this type there is a bilateral condylar fracture associated with angular deformity; the mandible is also fractured in the region of the midline. These fractures, when associated with a backward and inward displacement of the anterior fragments of the fractured mandible, allow the tongue to drop back on to the posterior pharyngeal wall, with resulting obstruction.

Type 5.—This type of fracture, which is in the region of the angle of the mandible, often needs no treatment *per se*. It is occasionally, however, associated with a very marked degree of swelling both externally over the region of the angle of the mandible and internally involving the cheek, soft palate, base of tongue, and posterior pharyngeal wall. On occasions this swelling causes severe respiratory obstruction, and is due to haemorrhage, probably as a result of rupture of the inferior dental vessels.

No effort on the part of the patient can relieve the obstruction in these cases, as all local muscle action is limited owing either to the pain associated with the fracture or to the local oedema and haemorrhage.

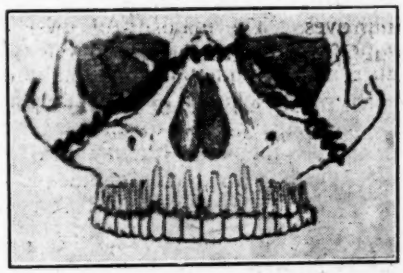
In none of these types has paralysis of the palate been noted, either immediately after the accident or during the course of the follow-up.

These injuries are often associated with a loss of consciousness at the time of the accident, and if intra-oral, pharyngeal, or naso-pharyngeal haemorrhage occurs blood may be aspirated into the lungs, and respiratory distress further increased. Examination of the chest frequently confirms this.

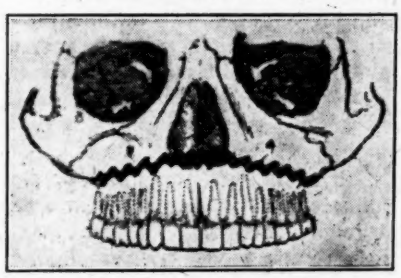
It is to the credit of general practitioners and general hospitals that the majority of cases of fractured jaw have been transferred to this unit promptly for the specialized treatment necessary. Some of these patients have later described a terrifying journey in an ambulance during which they imagined they were suffocating. Many have arrived in a collapsed condition. One patient aged 78 arrived in a state of congestive heart failure as a result of the respiratory obstruction.

Treatment

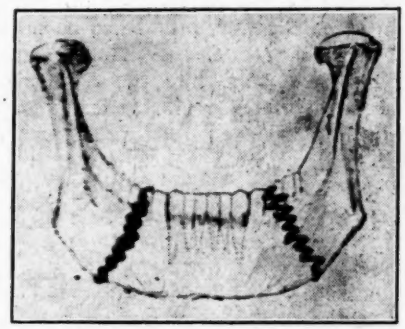
It is true that when the fracture is reduced and immobilized the respiratory obstruction is relieved and the patient's condition rapidly



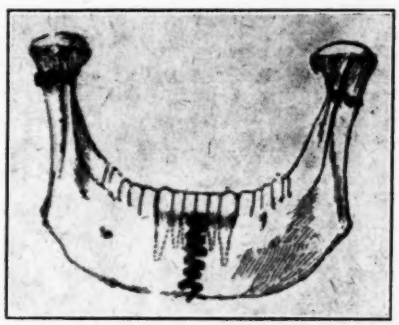
TYPE 1.—Radiograph and diagram of fracture of middle third of face.



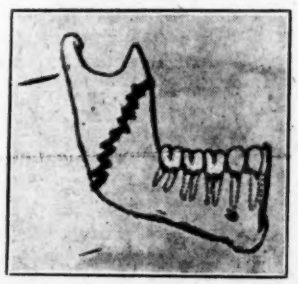
TYPE 2.—Radiograph and diagram of horizontal fracture.



TYPE 3.—Radiograph and diagram of comminuted fracture of the mandible.



TYPE 4.—Radiograph and diagram of fracture of condyles and anterior part of mandible.



TYPE 5.—Radiograph and diagram of fracture in the region of the angle. Intra-oral photograph.

improves. The majority of these patients on arrival are unfit for an anaesthetic and the lengthy operative procedure which reduction and immobilization of the fracture with wires, splints, or pins entails. To attempt this is exposing the patient to an unnecessary risk. Frequently, immobilization of a fracture can be achieved only by the use of cap splints, and this means a delay of six to eight hours while they are being constructed.

A relatively simple procedure has been used to relieve the respiratory obstruction, and can be carried out by any reasonably competent person. A No. 8 or 10 Magill nasopharyngeal tube lubricated with 5% cinchocaine hydrochloride ("percaine") ointment is passed through one or other nostril. It may not be easy to do this if the septum is deflected or the nose fractured, and a little manipulation may be necessary. There is invariably some difficulty in passing the tube once it has reached the posterior pharyngeal wall. Continuous gentle pressure, however, usually results in the tube slipping past this obstruction, and respiratory excursions immediately take place freely through the tube. The patients are relieved, anxiety is allayed, and recovery from shock is rapid. The fact that obstruction invariably occurs at the posterior pharyngeal wall indicates that there is approximation of the base of the tongue, the palate, and the posterior pharyngeal wall. In cases in which blood has been aspirated into the lungs a flexible gum-elastic catheter is passed via the nasopharyngeal tube into the trachea and bronchi, and the blood aspirated. This latter procedure, if the patient is still in a confused state, causes no reflex attempts at coughing. In cases in which the level of consciousness is not depressed the gum-elastic catheter will produce a laryngeal reflex which will distress the patient, and it is best then to discontinue the attempt to aspirate. Aspiration, when it does not cause distress, is essential, as the patient is either unable or unwilling to cough. Retention of the blood may lead to collapse of the lung or pneumonitis. Periodic aspiration of the pharynx is also carried out for the purpose of removing saliva or any oozing which may take place, as the patient is unable to swallow or cough.

Occasionally these fractures, particularly Type 1, are associated with head injuries. It is of the utmost importance in these cases that the respiratory obstruction be relieved and cerebral congestion avoided.

Relief of the obstruction, by decreasing restless movement, also allows good *x*-ray pictures to be taken.

Summary

Five types of fracture of the jaw which may give rise to respiratory obstruction are described and illustrated.

The importance of prompt relief of the obstruction is stressed.

Treatment by means of a No. 8 or 10 Magill nasopharyngeal tube, with periodic aspiration of the pharynx to remove saliva or oozing, is described.

I wish to thank Mr. Rainsford Mowlem for his advice in the preparation of this paper and the nursing staff for their assistance in this work.

The Central Council for District Nursing in London (25, Cockspur Street, S.W.1) has issued a revised edition of its "Directory of District Nursing and Street List for London." The directory lists in alphabetical order the name of nearly every street or place in the administrative County of London, together with the borough and postal district in which it is situated. A reference number attached to each street or place shows in the index the name and address of the nursing association that covers it.

VESICAL CARCINOMA WITH BILHARZIA

BY

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AND

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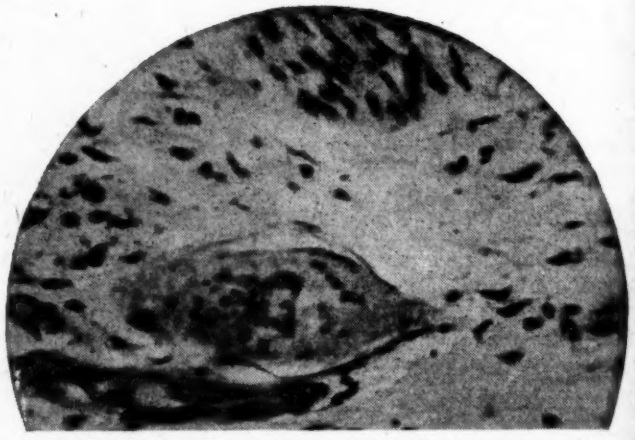
Schistosomiasis on Abadan Island is exclusively of urinary type and is not a common disease. It is known that 25 new cases were reported from the laboratories in 1947 and 46 in 1948. From January 1, 1949, all cases were admitted to the Isolation Hospital, and in ten months there were 50 admissions, 43 being new cases diagnosed by discovery of the ova in the urine, four relapses, and three cases diagnosed at cystoscopy. These are not large figures for a population in the region of 200,000, and it is doubtful whether any of the cases were infected on the island itself. All the cases admitted in 1949 have been interrogated and found to have visited endemic areas in Iraq or Iran. Moreover, no snails of the species *Bulinus, Physopsis,* and *Planorbis,* the intermediate hosts of the parasite, have yet been discovered here. No case has previously been known to have developed malignant disease in Abadan.

Case Report

An Iranian man aged 40 was admitted to the Isolation Hospital on March 20, 1949, complaining of painless terminal haematuria for the previous fifteen days. He stated that he had lived on Abadan Island for three years and used the Company's piped water for drinking and washing, but during 1947 he spent a month in a village near Ahwaz where the only water available was from the river. He had a suprapubic scar, which he said was from an operation for stone performed elsewhere in 1942, but no details of this were available and no other abnormality was found on examination. The urine examined contained numerous ova of *Schistosoma haematobium* and numerous red blood cells. These findings were repeated on February 26, March 1, April 8, and April 14. On February 22 the red cells alone were found, and on April 27 the urine was normal. On April 27 the patient was discharged. During his stay he had had 22 gr. (1.4 g.) of potassium antimony tartrate.



Photomicrograph showing ovum of *Schistosoma haematobium* adjacent to a group of tumour cells and separated from a surviving bundle of muscle fibres by fibrous tissue. The terminal spine of the ovum shows clearly.

On July 7 he was admitted to the General Hospital. For several months he had had a dull ache in the right loin and

just before admission an attack of colic. Small stones were passed, and he produced these for inspection. When examined he was tender in the region of both kidneys. No kidney enlargement was felt. His general condition was good. The urine contained abundant pus, *Bact. coli*, and albumin, but no ova. His blood urea was 50 mg. per 100 ml. on July 11, and 34 mg. on July 17. An intravenous pyelogram showed a non-functioning left kidney containing a stone, a moderate hydronephrosis of the right kidney, a distended right ureter, and several small stones in the bladder.

Operation was performed on July 30 under general anaesthesia. The wall of the bladder was found to be replaced by a fibrous mass ¾ in. (1.9 cm.) thick. The abdominal contents were packed off and the bladder opened through the posterior surface. The cut surface showed that the fibrous mass extended down to an apparently normal mucosa. Three small stones and a quantity of calcareous material were so adherent to the mucosa that curetting was necessary. As removal of the fibrous mass would have involved cystectomy it was decided to wait for the result of a biopsy, and the bladder was closed with suprapubic drainage through an indwelling catheter.

The histological section of the bladder wall showed the bladder mucosa to be thin, disorderly, very variable in its nuclear staining, and ill-defined on its deep surface. Beneath it an abundance of chronic inflammatory cells were embedded in fibrous tissue containing groups of ova of *Schistosoma haematobium*. None of the ova was calcified and all contained recognizable miracidia. The mass beyond this inflammatory zone was a scirrhous carcinoma with strands and islets of deeply staining malignant cells embedded in dense fibrous tissue which also contained fragments of bladder muscle and occasional inflammatory cells.

On August 20, at a second operation, the right ureter was transplanted into the rectum, the left ureter was divided and tied off (as the left kidney was known to be functionless), and the bladder and prostate were removed entirely.

Discussion

The interest of the case is in its rarity. Ferguson (1911), who first drew attention to the frequent association between carcinoma of the bladder and bilharzia, did so in a detailed examination of 40 cases examined at necropsy. Ten of his cases were of general infiltration of the bladder wall with growth, and in only two of these were ova found mingled with the tumour cells.

An even smaller proportion of the 130 cases dealt with surgically by Makar (1942) were general infiltrations. He described six, but noted that these cases were likely to remain undiagnosed until operative treatment was no longer possible. The absence of cystoscopic evidence is always bound to deceive the clinician.

How far the presence of ova in the bladder wall contributes to the development of malignancy does not appear to be known. Girges (1934) said: "Although malignant disease of the bladder is met with more frequently in Egypt than elsewhere, it is very rare and is not so prevalent as stated by some authors (0.25% in my series)." He attributed to these authors the error of mistaking the exuberant inflammatory masses projecting into the bladder for malignant growth. Strong (1945), however, quotes an investigation by Sourour of 373 cases of urinary bilharzia in men, among whom 78 were found to have malignant disease. Willis (1948), reviewing the literature, observes that as practically all of the bladder reports originate from Egypt, in some parts of which the infestation rate is as high as 90%, the existence of both diseases in the one individual is bound to be a frequent occurrence. On these and other grounds he concludes that, although it is possible that bilharzial cystitis does predispose to carcinoma, the evidence is still not conclusive.

The prognosis in diffuse malignant infiltration of the bladder is gloomy in the extreme. Makar employed total cystectomy in three of his six patients and all died within a year.

We are indebted to Mr. A. C. Turner, chief medical officer of the Anglo-Iranian Oil Co., Ltd., in Iraq and Iran, for permission to publish this paper, and Mr. J. D. Hopkinson for the photomicrograph.

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ACUTE ANTHISAN POISONING

REPORT OF A FATAL CASE

BY

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AND

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(From the North-western Forensic Science Laboratory, Preston)

In a critical review of antihistamine drugs Hunter and Dunlop (1948) state that in the five years of their therapeutic use no deaths or toxic effects leading to organic change have been reported. Toxic reactions severe enough to necessitate discontinuance of the drugs have been recorded by Kern (1947), Sternberg (1947), Sachs (1948), and others. Fatal cases have been very few; but in 1949 two were reported in the literature, both of which were in young children and were due to accidental ingestion of antihistamine preparations. Rives *et al.* (1949) reported a fatal case in a child aged 16 months following the accidental ingestion of 100 mg. of methapyrilene hydrochloride ("thenylene hydrochloride"). Tobias (1949) recorded another, also in a young child who accidentally swallowed six 0.1-g. tablets of "anthisan."

Below we record a fatal case of anthisan poisoning in which qualitative tests for the active principle of anthisan in the body fluids and the main organs were positive.

Case Report

On June 26, 1949, a healthy female child aged 16 months who was on holiday with her parents at a seaside resort was found in her cot about 10 a.m. playing with a box of anthisan tablets, which she had reached from a small bedside cabinet. Her hands, lips, and tongue were stained green from the tablets, which she had been sucking. Her general condition was unaffected and she continued to play. The tablets contained 0.1 g. of anthisan. The actual number eaten was unknown, but probably was not more than six. As the child appeared normal her mother took her out on the promenade from 10.15 a.m. until noon, when she was returned to her cot in the hotel. About 12.30 p.m. her condition had changed: she was moaning, was unconscious, had muscular twitchings and a profuse catarrhal discharge, was foaming at the mouth and nose, and probably had convulsions. She was taken to the local hospital, where she was found to be dead. Death probably occurred about three hours after eating the tablets.

Necropsy

The necropsy was performed about 24 hours after death. The body was that of a well-nourished female child showing

greenish discoloration of the lips and fingers. On moving the body, greenish-coloured watery fluid poured from the nose and mouth.

Internal examination revealed no evidence of organic disease. The main signs were those of acute passive congestion. The meninges, spleen, kidneys, and liver were congested. The stomach contained 6 oz. (170 ml.) or more of watery undigested food showing a marked greenish tinge. The contents of the duodenum, jejunum, and ileum were also tinged with the same colour.

On histological examination both lungs showed acute passive congestion, intra-alveolar haemorrhages, and small extravasations of red blood cells into the alveoli; many of the alveoli contained oedematous fluid. The heart appeared normal except for capillary hyperaemia. The liver showed marked cloudy swelling. The red pulp of the spleen was also congested.

Chemical examination of the box of tablets found in the child's cot, and of the stomach and duodenal contents, urine, blood, liver, and kidneys, was made by one of us (E. P.). Information regarding methods of assay and chemical tests for anthisan was kindly furnished by Messrs. May and Baker, Ltd., the manufacturers of the tablets, such information not then being available from the literature.

Anthisan, or mepyramine maleate, is the maleic acid salt of N-2-dimethylaminoethyl-N-methoxybenzyl-α-aminopyridine, and is a creamy-white solid, soluble in water and having a melting-point between 98° and 101° C. In the pure form it may be assayed for mepyramine by hydrolysis, and extractions of the base with chloroform and direct weighing of the residue after removal of the solvent. Maleic acid may be determined by direct titration with N/1 sodium hydroxide, using phenolphthalein as an indicator. The nature of this assay, however, precludes its use for the determination of the drug in biological materials, and in the absence of any other method a quantitative determination was not attempted in the present case.

A solution of the base in dilute hydrochloric acid gives a yellowish-green precipitate with Mayer's reagent, and a trace of the dry base gives a bright cherry-red colour with concentrated sulphuric acid.

The identity of the tablets was established by these tests and by a further test involving identification of the maleate radical.

The necropsy material was submitted to the classical Stas–Otto extraction process. As anthisan is a basic substance it was expected that it would be extracted at the caustic-soda/chloroform stage—and this extract, on evaporation, did in fact give the reactions with Mayer's reagent and sulphuric acid as mentioned above. This, however, applied to the stomach contents only, and no such reactions were obtained from similar extracts from the liver, kidney, urine, or blood.

The diagnosis in this case was acute poisoning due to mepyramine maleate.

Comment

Although the clinical observations were incomplete the main features were similar to those described by Tobias. The onset of symptoms was about two and a half hours after ingestion of the tablets, and the survival period was about three hours. The principal features were unconsciousness, catarrhal discharge, and muscular twitchings, followed probably by convulsions. The naked-eye and microscopical appearances at the necropsy revealed acute passive congestion only. In the case reported by Rives *et al.* the antihistamine drug was methapyrilene, which differs from anthisan in chemical structure, the methoxybenzyl portion of the nucleus being replaced by the sulphur ring. This drug is said to be less active than anthisan. The symptoms and their time of onset were similar to those observed in the two fatal anthisan cases, but the survival period of fifteen hours is much longer. This may have been due to the less active nature of the methapyrilene preparation.

Summary

A fatal case of anthisan poisoning in a child aged 16 months is described.

A positive reaction for mepyramine maleate was obtained from the stomach contents but not from the liver, kidneys, blood, or urine.

We wish to thank Messrs. May and Baker Ltd. for technical information regarding the chemical tests for mepyramine maleate, and Mr. E. B. Love for details of the structure of methapyrilene.

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TRICHOMONICIDAL ACTION OF DINAPHTHALENE METHANE SILVER DISULPHONATE

BY

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Dinaphthalene methane silver disulphonate in 1% aqueous solution (" viacutan ") has a *p*H value of 4.5 to 5; it contains a wetting agent to assist spreading and a water-soluble yellow dye to indicate the areas treated. It has the property of attaching itself to and penetrating animal tissue. Sixty hours after painting living skin, silver deposits can be demonstrated in the epithelium at an average depth of 0.3 mm. It inhibits the growth of both Gram-positive and Gram-negative organisms (for example, *Staphylococcus aureus, Bacterium coli, Salmonella enteritidis,* and *Proteus*) in twenty-four-hour broth cultures in a dilution of 1 in 16,000—an antiseptic power twenty times that of phenol. Its activity is enhanced by the presence of blood, pus, or serum.

The multiplicity of remedies recommended for the treatment of trichomonal vaginitis is some indication of the complexity of the problem; relapses or recurrences are all too frequent. While recognizing that a fair proportion of recurrences are due to reinfection by the male during intercourse, it is known that relapses without reinfection do occur. An example of the latter is the case of a virgin aged 15 years who had four six-week courses of treatment within twelve months for recurrent trichomonal vaginitis, using gentian violet, 1% aqueous solution, together with acetarsol compound powder insufflations and acetarsol compound pessaries.

Some authorities believe that the *Trichomonas vaginalis* organism has a life cycle, part of which is spent in the deep vaginal epithelium, though as yet the non-flagellate stage has not positively been demonstrated (Trussell, 1947). In theory, then, for a complete and rapid cure of trichomonal vaginitis an antiseptic with a penetrating power is essential. Dinaphthalene methane silver disulphonate, having this power, was tried in over twenty resistant cases, and all, including the above-mentioned case, were found to be free from the symptoms and signs of the condition after one course of treatment. This consisted of six weekly paintings of the vagina with 1% dinaphthalene methane

silver disulphonate without any preliminary cleaning, followed, as with all other antiseptics hitherto employed, by the insufflation of acetarsol compound powder in non-pregnant cases, together with the use of acetarsol compound pessaries daily during the course of treatment. In none of the cases was a relapse reported within six months.

Dinaphthalene methane silver disulphonate in 1% solution is now used as a routine in all cases of trichomonal vaginitis and also for pre-operative and post-operative sterilization of the skin in obstetrical and gynaecological operations.

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Medical Memoranda

Schistosoma Mansoni Infection

The success which attended the treatment of urinary schistosomiasis in African school-children with a short concentrated course of miracil D (Blair *et al.*, 1949) suggested that the drug might be given a trial in two cases of *Schistosoma mansoni* infection in European children in Kenya. Both cases had previously been resistant to treatment with antimony preparations. The children probably contracted the infection in 1946, when paddling in a stream within the Nairobi Municipal Boundary.

CASE REPORTS

Case 1.—A boy aged 10½, weight 37 kg. on May 20, 1949, had had 108 injections of various antimony preparations at different times in the past three years. Examination of his faeces in May, 1949, still showed large numbers of viable eggs. Following the advice of Dr. Blair he was given miracil D orally, 27 mg. per kg. of body weight daily, for three days. The drug was dispensed in gelatin capsules, each containing 200 mg. to minimize the gastric irritation sometimes produced by the plain powder or tablet. In spite of this precaution he vomited repeatedly after the third dose. Some milk was given, which seemed to allay the sickness, and the treatment was continued. The remainder of the course was marked by only a little nausea and vomiting on the third day. Some discoloration of the skin was apparent, reminiscent of that seen during mepacrine prophylaxis of malaria, but this faded and disappeared within a week. There was no jaundice and neither the liver nor the spleen was enlarged. The urine during treatment was an orange-yellow colour. For a week after treatment he was lethargic and uninterested in his food, but thereafter became his usual cheerful self.

Case 2.—A brother of the patient in Case 1, aged 12, weight 33.6 kg. on June 5, 1949, also had viable eggs present on examination. He had not had as many injections as his younger brother, as at one time he was thought to have been cured. He was given "tabloid nilodin," an enteric-coated preparation of miracil D, in the same dosage—that is, 27 mg. per kg. of body weight daily for three days. Apparently nilodin causes much less gastric irritation than miracil D in capsules, for he had very little nausea and no vomiting during the course.

Weekly stool examinations for two months disclosed no ova. The Cercarial antigen test (Blair and Ross, 1948) was performed on both cases in July, 1948, with locally prepared antigen (after the formula of Blair *et al.*) and was then strongly positive. The tests were repeated on July 27, 1949, some two months after treatment, and were found to be negative. Many further samples of stools have been examined since then, the last occasion being in March, 1950. All have been negative, so one may take it that the cure is complete.

S. mansoni infections in the past have been notoriously resistant to treatment with antimony. While miracil D (nilodin) has produced a most satisfactory percentage of cures with *S. haematobium* infections it has not been as successful with *S. mansoni*.

Our thanks are due to Dr. D. M. Blair, of the Schistosomiasis Research Laboratory, Salisbury, for his helpful advice, and to Messrs. Burroughs Wellcome and Co. for a supply of tabloid nilodin.

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Association of Achalasia of Cardia with Oesophageal Carcinoma

In view of the fact that I have seen a second case of this condition so soon after reporting a similar case (Baer and Sicher, 1947) it seems desirable to record the details.

Although two such cases hardly show that the condition is a frequent one, the rapid appearance of this second case does lend weight to the previous suggestion that achalasia produced conditions favourable to the subsequent development of carcinoma, and that if the possibility of its occurrence was more widely recognized it would be discovered more often. The difficulties of diagnosis are certainly very real, and the importance of oesophagoscopy in checking any doubtful cases cannot be over-emphasized.

CASE REPORT

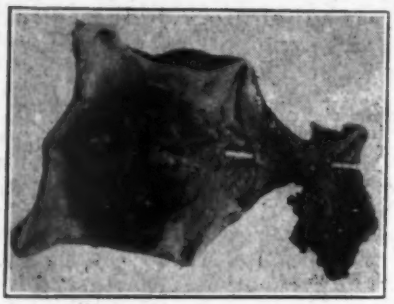
A married woman aged 49 had panhysterectomy on November 27, 1947, for carcinoma of the body of the uterus; this was followed by deep *x*-ray therapy. The pathological report revealed a highly differentiated papillary adenocarcinoma. She was followed up and found to be progressing satisfactorily. On her visit in April, 1949, she reported "tightness across the chest" and difficulty in swallowing solid foods. On closer interrogation she admitted that she had had this swallowing difficulty on and off for about 10 years; recently, however, it had been increasing in severity, and the periods free from it had become shorter. She could take fluids and semi-fluids with ease, but the solid food caused the discomfort. In the last six months she had lost several pounds in weight.

On examination, her general condition was found to be good; no abnormal signs were found on physical examination, and a straight *x*-ray film of the chest was normal. The report on the barium swallow was as follows: "Marked dilatation in the oesophagus due to cardiospasm. Constriction in the oesophagus at the junction between mid and lower thirds with ? filling defect on the right below this."

Oesophagoscopy was performed on May 27, 1949, with the following findings: "Oesophagus full of food: ulcerating growth at about 7 cm. from cardia: cardia in spasm. Dilated with bougies and a Negus hydrostatic bag." A biopsy was carried out and the pathological report was: "Section shows the features of an exceedingly cellular and anaplastic squamous carcinoma."

The patient was then referred to Mr. J. Leigh Collis for the opinion of a thoracic surgeon, and was admitted to the Queen Elizabeth Hospital, Birmingham. Pre-operative investigations revealed a secondary anaemia with haemoglobin at 68%. Electrocardiography indicated no cardiac defect. A further oesophagoscopy showed a "typical appearance of achalasia: massive growth seen at 31½ cm." She was given a blood transfusion, and oesophagectomy and gastro-oesophagostomy was performed on June 18.

A large growth was found midway between the arch of the aorta and the diaphragm. It was resected and continuity of the alimentary tract was established by an anastomosis between the stomach and the oesophagus. The whole operation went satisfactorily and the patient was in fair condition in the



immediate post-operative phase, but two days later she had to be bronchoscoped because there was complete blocking of the left main bronchus. The same night she suddenly collapsed and died. Permission for necropsy was not obtained, but the specimen was examined by Professor J. W. Orr, of the Birmingham University, and the original histological diagnosis of a squamous-celled carcinoma was confirmed. The accompanying photograph of the specimen shows the wide extent of the growth.

COMMENT

The striking features in this case were : (1) Long-standing achalasia, symptom-free for nearly 10 years without any treatment ; (2) short duration of increasing dysphagia for solid foods : semi-solids and fluids were well tolerated ; (3) loss of weight not proportional to the intake of nourishment, and absence of symptoms of any obstructive organic lesion until recently in spite of the presence of a large growth.

Finally, I should like to repeat the plea not to be satisfied with the diagnosis of achalasia until presence of a growth has been excluded by oesophagoscopy. I would even advise that each known case of achalasia should be followed up at regular intervals, as only in this way can an early diagnosis of carcinoma be made and the patient be saved.

I wish to thank Mr. J. Leigh Collis for his help in this case.

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REFERENCE

Baer, P., and Sicher, K. (1947). *Brit. J. Radiol.*, **20**, 528.

Treatment of Tropical Ulcers by Food Yeast

On taking up an appointment in Jamaica in September, 1947, I found a considerable number of cases of tropical ulcer among the labourers and their families, and more especially among those doing temporary work. The ulcers were usually of long-standing (from two months to two years), were resistant to treatment, and often broke down.

The available literature on the subject suggested that the ulcers might be due to a vitamin deficiency, as no specific organisms had ever been found. However, no reference was made to the ulcers actually having been treated as a vitamin deficiency, and the existing forms of treatment were admittedly disappointing.

That the ulcers were due to a vitamin deficiency seemed likely to me because (1) they occur chiefly among people suffering from malnutrition, particularly among those whose diet is deficient in vitamin B, and (2) they occur mainly in tropical countries, particularly during and towards the end of the hot season, when the body stores of vitamin B will have been further depleted by increased sweating (recent work having shown that vitamin B alone is excreted in the sweat). I therefore decided to treat the ulcers as a vitamin-B-deficiency disease. Dried "torula yeast," produced by Colonial Food Yeast Limited, a Government-sponsored concern, was used.

The first six cases healed up extraordinarily quickly—in a matter of three to four weeks. The ulcers varied in size from ¼ to 5 in. (1.25 to 12.7 cm.) in diameter. The next 30 cases were divided into two groups: (1) Those receiving the yeast treatment, which consisted of (*a*) powdered yeast applied to the surface of the ulcer and sealed down with "elastoplast" and left untouched for one to two weeks, and (*b*) 1 dr. (4 g.) of yeast in food three times daily until the ulcer was healed. (2) A control group receiving any of the treatments advised in the books, which included: sealing down with elastoplast alone, "acetylarsan" injections and local application of acetylarsan, and local and general use of sulphonamides or penicillin.

In group 1 cases the success of the first six cases was repeated with the exception of four cases which were Kahn-positive and took much longer to heal (three to four months) even after vigorous antisyphilitic treatment had been started. Even in these cases the filthy-looking surface of the ulcers was replaced by healthy-looking granulation tissue free of pus and sloughs in two weeks, and complete epithelization was only delayed.

Those in group 2 proved uniformly slow in healing (three were Kahn-positive), none showing any real signs of healing in six weeks and the majority of these patients carrying on for three to four months, when they all objected to not having the vitamin-B treatment. All were then given yeast, with results similar to those in group 1.

In all cases treated with yeast the average healing time was two to three weeks in ulcers ¼ to 1 in. (1.25 to 2.5 cm.) in diameter and four to five weeks in ulcers 4 to 5 in. (10.2 to 12.7 cm.) in diameter, with the exceptions, already mentioned, of those who were Kahn-positive. Since this experiment yeast has been used as a routine treatment on all cases of tropical ulcers and has continued to give similar results.

A modification in the treatment was made about August, 1948, when we started to carbolize the ulcers before applying the yeast. This brought a great reduction in the time needed for healing, even cases with a positive Kahn test healing in four to five weeks.

The standard of cure is complete epithelization of the ulcer. In no case has skin grafting been necessary, and, further, the skin that has grown over the ulcers is extremely sound, and even in the biggest ulcers the lack of scarring is remarkable.

In seventeen months 188 cases have been treated with no failures and only one relapse. This occurred in a man who had an ulcer 5 in. in diameter over the lower and outer half of the tibia. He had severe varicose veins and a positive Kahn reaction. A wooden splinter caused sepsis in the skin over the original site of the ulcer, and this remained untreated for four weeks.

The autolysed torula yeast used contains a proteolytic enzyme, which may account for the rapid disappearance of pus and sloughs from the ulcers. Twelve cases were therefore treated with other products containing vitamin-B complex but no proteins or proteolytic enzymes, notably becol and thiamin, in the same way as food yeast. The results obtained paralleled those with food yeast except that ulcers containing much pus or sloughs were much slower in showing a clean surface, though healing was retarded only by about two weeks.

Three cases were treated by carbolization and elastoplast alone and good results were obtained, but the time required for healing was about twice as long and the scars seemed not quite so sound.

T. C. HALLINAN, L.M.S.S.A.

Reviews

THE ANATOMIST DISSECTS HIMSELF

An Autobiography. By Sir Arthur Keith. (Pp. 721; 5 illustrations. £1 5s.) London: Watts and Company. 1950.

Sir Arthur Keith's many friends and admirers will be glad to read this book, which gives a full account of his life's experience—and incidentally is a witness to his remarkable memory. The author's main object in writing was to give an account of his researches; despite the importance of those researches we imagine that most readers of these 700 pages will be more interested by the intimate details of the life of this famous Aberdonian and diverted by the vivid sidelight thrown on the lives of the distinguished men with whom Sir Arthur came in contact.

Arthur Keith was the sixth child in the family of ten children of John Keith, a small farmer near Aberdeen. He profited little by his early scanty education, and at the age of 13 began to help his father on the farm. Of this experience he now writes, "I look back on these days as the happiest in my life." When he was 16, however, an undergraduate from Aberdeen lodged for a time with the Keiths, and Arthur became fired with ambition to study at the university. He went for a time to Gordon's College and showed such promise that arrangements were made for him to study medicine at Marischal College. His first year he gained the prize in junior anatomy and was given *The Origin of Species*, which thereafter became the inspiration of his life. His outstanding ability, his eager curiosity and industry, impelled him on until he graduated with distinction.

After a short time in general practice at Mansfield he went as a medical officer to a gold-mining company in Siam. It was here that he made his anatomical studies of the monkeys which lived in the jungles around the mines—studies which laid the foundation for his vast erudition in that field. When the company failed he returned home, studied for and took the English F.R.C.S. and the M.D. of Aberdeen, and then, knowing what he wanted but having to wait for it, lived for some time on borrowed money. The demonstratorship of anatomy at the London Hospital gave him the start he needed and his own abilities did the rest; they carried him on to the conservatorship of the Museum of the Royal College of Surgeons, a knighthood, the presidency of the British Association, the rectorship of Aberdeen University, and many other honours and distinctions.

All this time Sir Arthur was writing books which were widely read and appreciated and made his name of international reputation. Though he states that he found writing a considerable labour, this seldom deterred him—he says, "Editors tempted me, and I too often fell to their demands."

Sir Arthur confesses that he was ambitious and competitive, and he leads us to infer that he was of a jealous disposition. He was certainly introspective, for after a certain dramatic incident which terminated a friendship he wrote 25 pages in his diary analysing the situation. Most readers will think that the author judges himself too harshly. After carefully reading the whole of the book the impression is left that the anatomist has therein dissected himself skilfully and thoroughly. Certainly an interesting dissection.

Sir Arthur was fortunate in his marriage, and there are many evidences that his wife was a great help to him in his career. Much of the interest goes out of the biography after the death of Celia Keith. They had no children, and the author states that this was "not a sentence of Fate."

The book is well written and easy to read. I noted only three or four minor typographical errors. If a second edition is called for there should be added to it a short bibliography of Sir Arthur's chief books and writings, and perhaps a short table of the principal events of his life with the relevant dates.

V. ZACHARY COPE.

DIFFERENTIAL DIAGNOSIS OF CHEST DISEASE

Differential Diagnosis of Chest Diseases. By Jacob Jesse Singer, M.D., F.A.C.P. (Pp. 344; 171 illustrations. £2 12s. 6d.) London: Henry Kimpton.

The textbook on surgical diseases of the chest by Graham, Singer, and Ballon published in 1935 was so useful and complete a presentation of its subject that it is a matter for regret that it has not been kept up to date by further editions. Many physicians interested in diseases of the chest have felt that a companion volume written on similar lines and dealing with the medical aspects of chest diseases would be very welcome. Dr. Singer's book was therefore opened with great expectations. It must be admitted regretfully that it does not entirely justify these expectations. It sets out only to discuss differential diagnosis and says nothing systematic about prognosis or treatment. Whatever may be thought of the value of comprehensive textbooks on differential diagnosis, the role of a textbook on this within a limited subject seems debatable.

The book gives an impression of having been rapidly and almost casually written. There are many statements whose accuracy may be called in question. To quote some examples at random, few would agree that "abscess [of the lung] almost always is a sequela either to operation, especially on the pharynx, or to the aspiration of a foreign body" (p. 78); that a tuberculous cavity in the lung can be differentiated from a tuberculous spontaneous pneumothorax by estimation of the percentage of carbon dioxide in the contained air (p. 95); or that a hydatid cyst is particularly likely to be mistaken for a carcinoma "because of its rapid growth" (p. 262).

In many other respects the principles of diagnosis of chest disease are well presented. The standard of the many illustrations, mainly reproductions of radiographs, is very variable—some are excellent, others leave much to be desired. The interpretation placed upon some of them would not be agreed by all physicians. For instance, the lateral radiograph reproduced as Fig. 105 suggests, at any rate in the reproduction, a consolidated upper lobe rather than an inter-lobar effusion. There is a list of references at the end of each chapter, but the selection of them appears to have been rather arbitrary, and many are rather old or not readily accessible to most readers. Occasionally, as in the reference to the work of Glass on p. 208, an author is mentioned in the text without a corresponding reference in the bibliography. Altogether, this is a disappointing publication, and the student is likely to get from it a confused picture of a part only of chest disease.

J. G. SCADDING.

PNEUMOCONIOSIS TO THE RADIOLOGIST

Lung Dust Lesions Versus Tuberculosis. By Lewis Gregory Cole, M.D., F.A.C.R. (Pp. 474; illustrated. $10.) New York: American Medical Films, Inc., 8, Church Street, White Plains. 1949.

This most unusual book contains the observations of a radiologist on the problems of the aetiology, pathology, and radiographic appearances of various types of pneumo-

coniosis, particularly in relation to tuberculosis. The author begins with an allegorical account of the problem as he sees it, and of his approach to it—"to assemble all the facts that can be observed without being guided or misguided by the observations and conclusions recorded by others." He gives a long account of the microscopical identification of various kinds of dust in the lungs, especially under cross-polarization. He goes on to a discussion of phagocytosis and of the difference (which he believes to be important) between collagen and "reparative connective tissue." In a section on the pathology of lung-dust lesions compared with other pulmonary lesions he describes six distinct anatomical types of pathology which he claims can be correlated with six corresponding types of radiological picture. The author does not make it clear what purpose this classification is intended to fulfil or how the various types are related in the development of the disease. For instance, he says that his "vesicular" type has "no history; like Topsy it 'just growed' or it has been split away from the nodular type."

In a chapter on vascular abnormalities in lungs affected by dust the author reiterates his previously published opinion that dyspnoea in silicosis is due to pulmonary capillary vascular occlusion. A long section on various types of "small irregularly spherical masses" provides an elaborate exposition of the similarity between lesions attributable to dust and those attributable to tuberculosis, and in a further chapter on silico-tuberculosis the author insists that during life this diagnosis should not be made in the absence of a positive sputum. He discusses the great difficulty in determining the definite role of tuberculosis even at necropsy.

The reader is given an interesting account of the author's pioneering attempts to get his professional colleagues to accept radiology as a method of diagnosis of pulmonary tuberculosis; this includes a reprint of an article published by him in 1910 and his musings one Thanksgiving Day evening as he looked back on these early difficulties. After this diversion we are returned to the radiological diagnosis of pneumoconiosis. A suggestion is made that films should be interpreted by photometer readings of the densities of different parts of the lung fields—an elaboration which does not appear to achieve much more than a verbal description of the film. Types of film are described and good reproductions are given, with extensive case reports. The book concludes with an account of radiographical and microscopical techniques. The book is written in a pleasant conversational style, but this sometimes obscures the essence of the author's unorthodox but often stimulating ideas. It is magnificently produced and profusely illustrated.

C. M. FLETCHER.

BRUCELLOSIS

Brucellosis (Undulant Fever). Clinical and Subclinical. By Harold J. Harris, M.D., F.A.C.P., with the assistance of Blanche L. Stevenson, R.N. Foreword by Walter M. Simpson, M.S., M.D., F.A.C.P. Second edition, revised and enlarged. (Pp. 617; 111 illustrations (12 coloured). $10.) New York: Paul B. Hoeber, Inc.

The last word of the title of this book immediately suggests that the author is one of those American physicians who believe brucellosis to be the cause of a large amount of chronic ill-health, for reasons which others consider inadequate: and he is. We are told that "fatigue of varying degree is practically the only subjective symptom common to all cases of brucellosis," that fever may be absent, and the agglutination test as well as culture negative. This leaves two other allegedly specific diagnostic tests, that for skin sensitivity to a *Brucella* antigen and the opsonocytophagic reaction, and it appears that a good deal of latitude is permitted even in interpreting these.

A disease of varied symptomatology and indefinite duration, which may be complicated by such conditions as mental disturbance and arthritis, may readily be suspected in many patients, but the proofs offered by those who diagnose it so frequently are not wholly convincing. One would like to see a tabular statement of the grounds on which the diagnosis was made in the author's 700 cases: they are not always evident in the case histories given.

Dr. Harris's main treatment for chronic brucellosis is a vaccine. Aureomycin is mentioned only in an appendix, and its apparently inconstant effects in 109 chronic cases are what might be expected if some of them were misdiagnosed. Everyone will agree heartily with the pronouncement that brucellosis can be positively diagnosed only by cultivating the organism; one wonders why this was not done more often in some of his cases with definite local conditions, such as pyuria and salpingitis. The suggestion that "the diagnosis and treatment of brucellosis have become as proper a specialty as is syphilology and phthisiology" (presumably to be known as brucellology) will be as strongly contested by many readers. The more orthodox parts of the book furnish a useful account of the disease from every viewpoint, and there is a bibliography of 742 items.

L. P. GARROD.

THE ADRENAL

The Adrenal Gland. By Frank A. Hartman, Ph.D., and Katharine A. Brownell, Ph.D. (Pp. 581; 72 illustrations. £3.) London: Henry Kimpton. 1949.

This is indeed a first-class work by two pioneers who do not consider that their first-hand knowledge of the subject absolves them from the supplementary task of familiarizing themselves with the work of others and quoting appropriately and freely. In 1927, two years before Swingle and Pfiffner produced their potent adrenal extract, Hartman, MacArthur, and Hartman had prepared an extract which was undoubtedly efficacious in adrenalectomized animals, and this led to improved methods of extraction.

The introductory chapters on comparative anatomy, morphology, and chemistry hold much of interest for the clinician as well as the physiologist. There is scanty reference to the author's discovery of the fat factor in adrenal extracts, which mobilizes fat and causes its deposition in the liver of fasting adrenalectomized mice. Adrenaline seems to have been neglected in recent years with the discovery of potent adrenaline-free cortical hormones, but, now that its anti-allergic qualities have been correlated with its power of releasing adreno-corticotropic hormone, several chapters on adrenaline and the adrenal medulla are very welcome. Reluctance to assay unconventional or rarer elements, like sodium, deprived earlier investigators of the fruits that fell to Loeb's original mind and comprehensive technique. This was also dramatically true of potassium deficiency, which may cause death in diarrhoea and after gastro-intestinal operations, as well as with overdosage of desoxycortone. The reference to an increase in plasma magnesium after adrenalectomy may prove of equal importance to the receptive mind.

Inactivation of desoxycortone in the liver is proved by experimental implantation of tablets in the spleen. Reference to the stress reaction of Selye is well buttressed by reference to kindred work by many others, dating from 1943, including the technique of measuring the output of adrenocortical hormone into the adrenal vein by Martha

Vogt in this country. The problem of the relationship of ascorbic acid to the adrenal gland is well discussed, and the over-cautious and sceptical view that the adrenal gland is merely a storehouse, like the liver, for vitamin C can no longer be sustained. Indeed, the last two decades' history of the adrenal gland is proving that the over-righteous dull and sceptical have proved more deadly to progress than the highly speculative creative and imaginative, who have dared to fly ahead of their facts.

One might think that in a book of this kind, written by two physiologists, the clinical side would be inadequate, but it is remarkably good for the amount of space allocated. The authors are concerned with fundamentals, and no one who reads this book should fail to achieve a fundamental conception of modern knowledge of the adrenal glands.

S. LEONARD SIMPSON.

THE LARYNX

The Comparative Anatomy and Physiology of the Larynx. By V. E. Negus, M.S., F.R.C.S. With foreword by Sir Arthur Keith. (Pp. 230; 191 figures. £1 10s.) London: William Heinemann Medical Books. 1949.

Mr. Negus's book is much more than an abbreviation of his monumental *Mechanism of the Larynx*. This rather large volume has been out of print for some years, and it was a wise decision that, rather than reissue it in its original form, it should have its continued existence ensured as a smaller volume in which the extent of neither the subject matter nor the illustrations is curtailed. The result is an up-to-date presentation of the subject of laryngeal structure and function in a compass that brings it well within the range of students' textbooks. It is made the more useful to students by the fact that the numbers assigned to the illustrations correspond with those of the preparations in the Negus collection housed in the Museum of the Royal College of Surgeons of England.

F. WOOD JONES.

THE E.E.G.

Clinical Electroencephalography. By Robert Cohn, M.D. (Pp. 639; illustrated. £5 19s.) London: McGraw-Hill Publishing Company. 1949.

Dr. Cohn has accumulated in this large atlas several hundred electroencephalographic records made in his laboratory. They are similar to records made elsewhere, and they are intended to give the beginner experience in interpretation. Facing each record is a short clinical note giving the main points about the case, and a tabulated description of the outstanding features of the records. Normal tracings and those of tumours, vascular disorders, head injuries, epilepsy, and other conditions are arranged in sections, and there is an index. Departments of electroencephalography in the process of formation will find a compendium of this kind useful, if training in another established department has not been possible, and the laboratory staff can obtain their early experience from its pages before they study their own recordings. If they do so, Dr. Cohn's labours will have been rewarded.

DENIS WILLIAMS.

What Every Woman Should Know, by Malcolm Donaldson, F.R.C.S., F.R.C.O.G. (pp. 15; 9d.; London: William Heinemann Medical Books, 1950), is a pamphlet which draws the attention of women to facts of importance to their health. The author says in his foreword that the booklet is founded on the questions often asked him by his patients. The topics discussed include menstruation and dysmenorrhoea, pregnancy, contraceptives, the menopause, and malignant disease. Each is explained simply but thoroughly, and the book ends with a short list of "dos and don'ts" about health for women.

BOOKS RECEIVED

Review is not precluded by notice here of books recently received

The Medical Directory, 1950. Parts 1 and 2. (Pp. 2,676. 63s.) London: Churchill. 1950.

The Dentists Register, 1950. (Pp. 418. 18s.) London: Constable. 1950.

A Practical Handbook of Psychiatry for Students and Nurses. By L. Minski, F.R.C.P., D.P.M. 2nd ed. (Pp. 136. 6s.) London: William Heinemann. 1950.

Drug Plants of Africa. By T. S. Githens, M.D. (Pp. 125. 18s.) London: Geoffrey Cumberlege. 1949.

The Rheumatic Diseases. By G. D. Kersley, M.A., F.R.C.P. Foreword by Sir Francis R. Fraser, M.D., F.R.C.P. 3rd ed. (Pp. 143. 15s.) London: William Heinemann. 1950.

Collected Papers of the Middlesex Hospital, 1948-49. (No price.) London: Middlesex Hospital.

A Concise Applied Pharmacology and Therapeutics. By F. G. Hobart, Ph.C., and G. Melton, M.D., M.R.C.P. Foreword by Sir A. Abrahams, O.B.E., F.R.C.P. 3rd ed. (Pp. 234. 21s.) London: Leonard Hill. 1949.

Modern Treatment Year Book, 1950. Edited by Sir Cecil Wakeley, K.B.E., D.Sc., P.R.C.S. (Pp 352. 17s. 6d.) London: Baillière, Tindall and Cox. 1950.

Principles and Practice of Plastic Surgery. By A. J. Barsky, M.D., D.D.S. (Pp. 499. 76s. 6d.) London: Baillière, Tindall and Cox. 1950.

My Place to Stand. By B. Plagemann. (Pp. 241. 10s. 6d.) London: Victor Gollancz. 1950.

Regional Ileitis. By B. B. Crohn, M.D. (Pp. 229. 30s.) London: Staples Press. 1949.

Tropical Fatigue. By R. K. Macpherson, M.Sc., M.D. (Pp. 162. 17s. 6d.) Vol. 1. No. 10. Brisbane: The University of Queensland Press. 1949.

Adaptation. Edited by J. Romano, M.D. (Pp. 113. 16s.) London: Geoffrey Cumberlege. Ithaca, New York: Cornell University Press. 1949.

Physiology of the Nervous System. By J. F. Fulton, O.B.E., M.D. 3rd ed. (Pp. 667. 75s.) New York: Oxford University Press. London: Geoffrey Cumberlege. 1949.

Introduction to Neuropathology. By S. P. Hicks, M.D., and S. Warren, M.D. (Pp. 494. 85s.) New York, Toronto, and London: McGraw-Hill. 1950.

Science in Progress. By H. D. Smyth and others. Edited by G. A. Baitsell. Sixth series. (Pp. 322. 40s.) New Haven: Yale University Press. London: Geoffrey Cumberlege. 1949.

A Story of Nutritional Research. By Sir E. Mellanby, G.B.E., M.D., F.R.S. (Pp. 454. 38s. 6d.) London: Baillière, Tindall and Cox. 1950.

L'Alcoolisme. By P. Perrin. (Pp. 420. 1,300 francs.) Paris: L'Expansion Scientifique Française. 1950.

Le Insufficienze Acute del Circolo Periferico: Lo Shock. By L. Imperati. Foreword by L. Torraca. (Pp. 330. No price.) Naples: Idelson. 1950.

Tuberculosis. By B. B. Franco. (Pp. 496. 125 pesetas.) Madrid: Patronato Nacional Antituberculoso. 1950.

Funktionelle Diagnostik innerer Erkrankungen. By A. Fischer and C. Sellei. (Pp. 154. 19s. 6d.) Vienna: Springer. 1950.

Kongressbericht. By A. Rottmann. (Pp. 206. Sch. 30.) Vienna: Wilhelm Maudrich. 1950.

Die Leptospirose. By W. Rimpau. Part 8. (Pp. 157. M. 10.) Berlin: Urban and Schwarzenberg. 1950.

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DIABETES AND INSULIN

The value of insulin in the treatment of diabetes was recognized as soon as it became available for use, but it is only now possible, after a period of nearly 30 years, to appreciate at all fully the effect of Banting and Best's discovery on the survival rate of diabetes. Because of his unique experience in the management of diabetes Elliott Joslin's name is inseparably associated with the disease, and this lends both interest and authority to his survey, published in the opening pages of this issue, of the last half-century's progress in this field of medicine. Joslin's division of the period 1897–1949 into five eras bearing the names Naunyn, Allen, Banting, Hagedorn, and Best is a graceful tribute to those who have advanced our knowledge of the treatment of diabetes, and can be criticized only because it omits the names of many others, including that of Joslin himself. Both retrospectively and prospectively there is reason for optimism, though not complacency: the average duration of life after the onset of the disease has advanced for all ages from 4.9 years in the Naunyn era to 14.4 in the Best era, with a maximum of 18 to 19 years for those whose diabetes began under the age of 10 years and between the ages of 20 and 39. Diabetes with onset between the ages of 10 and 19 has a slightly poorer prognosis: Joslin attributes this to the reactions of the adolescent to the method of treatment, and he suggests that the medical profession must accept blame for not improving it. Prospectively the reasons for optimism are largely based on the assumption that the best results of the past should be capable of more general repetition and improvement in the future. Fourteen of Joslin's patients in whom diabetes began at under 20 years of age and has been present for 25 years are still free of all complications: this is particularly encouraging in view of the more gloomy opinion of Dolger and other American workers, who have reported retinal and other complications in 100% of such patients. Experience in this country fortunately accords with that of Joslin, but, even so, the incidence of retinal, arterial, and renal complications in long-standing diabetes constitutes the greatest unsolved problem in the treatment of this disease. Joslin emphasizes the importance of good diabetic control in the prevention of complications, but, while it is generally agreed that this is the best and only known method of prevention, the occurrence of complications in mild and well-balanced cases, and their occasional absence in the not so well controlled case, indicates that there is some other as yet unknown factor to be reckoned with.

Changes in the causes of death in diabetic patients show the same general trend in the U.S.A. as in this country—a steep decline in the incidence of diabetic coma with an increase in cancer, arteriosclerosis, and cardiovascular renal disease—the first due to the greater number of diabetics reaching middle and late life and the two last to the longer duration of the disease. It is significant that in an investigation in this country retinitis, hypertension, and albuminuria were found in 41% of young diabetics who developed the disease under the age of 15 and had had it for 15–19 years and in 56% of a similar group who had had diabetes for 20 years or longer. Priscilla White[1] reported an incidence of between 70 and 80% for a comparable group of cases in Joslin's clinic of 20 or more years' duration. These figures emphasize the need for further improvement in methods of treatment and for a new name with which to christen the next era. With the present ignorance of the cause of the complications of diabetes careful control of the disease must be regarded as the best method of preventing them. This, in Joslin's words, "means hard work, time, and interest," but it also means a far better organization for the efficient treatment of diabetics throughout this country. At the present time the diabetic population is conservatively estimated at about 150,000, of which between 50 and 70% require insulin. The clinics at which expert treatment is available are relatively few in number and widely separated, especially in rural areas. The inevitable result is that diabetics have to travel long distances for their treatment, and the clinics themselves are too overcrowded for the necessary individual attention to be given. It is to be hoped that in the near future steps will be taken to reorganize diabetic clinics on a sound regional basis, due attention being paid to the geographical distribution of diabetics. Not only would these clinics serve the needs of patients, but they could be used for giving doctors that special training and experience for which there is at present such an urgent need.

[1] *Amer. J. Med.*, 1949, **7**, 609.

HYDROCEPHALUS

The Medical Research Council recently published in their *Special Report Series* a study by Professor Dorothy Russell[1] which is the most complete and satisfying contribution to the pathology of hydrocephalus yet made. Professor Russell states that her observations represent an attempt to meet Spiller's[2] reproach that "it is not necessary to study the different works on hydrocephalus very exhaustively to find that actually

observed lesions are much rarer than theories explanatory of the causes of hydrocephalus." So carefully has she studied her material, which covers a great variety of cases, that she has found no use for the term idiopathic: no case was encountered in which the cause of hydrocephalus could not be explained on a factual basis. The three ways in which hydrocephalus may arise are by over-production of cerebrospinal fluid, obstruction of its circulation, and defective absorption. There is no acceptable proof that the first occurs, and evidence for the last is equivocal, though sinus thrombosis may give rise to hydrocephalus in certain circumstances. An obstructive lesion in the pathway of the cerebrospinal fluid is the usual cause for hydrocephalus. Some of these lesions—for instance, neoplasms—may be easily recognizable, but in other cases, notably of meningeal fibrosis, the lesion may easily be overlooked and its demonstration need careful microscopical examination. Professor Russell clearly shows how often a relentless search for a factual cause is rewarded, though it may sometimes be difficult to unravel the sequence of events, especially when surgical treatment has created a "smoke-screen." In general the most satisfactory method of classifying causes of hydrocephalus is according to the pathology of the lesion, but the clinician will still find it useful for diagnostic purposes to use the terms "communicating" and "non-communicating." The various methods of investigation provide him with means of localizing the obstruction, and in some cases he will be able by such means to determine its nature. More often, however, he will have to employ his clinical acumen to decide this point.

Congenital malformations are commonly the cause of hydrocephalus in infants, particularly those of the aqueduct of Sylvius. Stenosis, a simple narrowing of this channel, is a relatively rare condition, and "forking" of the aqueduct is the common congenital abnormality. Professor Russell prefers this term to "atresia," which implies absence of lumen, because in her specimens she has never found the iter entirely closed. It is usually replaced by two channels much distorted and of inadequate size, and this condition may be confused with inflammatory stricture. A rare abnormality at this level is a thin septum across the canal, and a similar membrane may obstruct the foramen of Magendie. The other common malformation is that originally described by Arnold[3] and Chiari[4]; it is associated with spina bifida. Professor Russell does not believe that the Arnold–Chiari malformation is the result of traction by the spinal cord tethered at its lower end in the spina bifida, nor has she found any obstruction of the aqueduct in these cases—a possible cause suggested by Lichtenstein.[5] According to her observations, cerebrospinal fluid can escape into the spinal canal but is unable to find its way up into the posterior fossa and basal cisterna because of the plugging of the foramen magnum by the cerebellar (Arnold) component. Rare malformations are platybasia, achondroplasia, and lissencephaly. In the latter condition there is agyria and the pia-arachnoid space is ill-developed, thus preventing the free flow of cerebrospinal fluid. Although few cases have been reported, the possibility that agenesis of the subarachnoid space can occur is important to the neurosurgeon. Many of the operations devised to form fresh pathways from the ventricles to the subarachnoid spaces fail, and the reason may be because these spaces have become to a great extent obliterated by long-standing compression and cannot open up again sufficiently even though cerebrospinal fluid is fed into them. Narrowing of the aqueduct may also occur as an acquired condition due to gliosis. Occasionally a glioma of the brain stem may closely resemble the lesion, but usually the histological picture is characteristic. The condition is an important one, for it is essentially benign, though if the obstruction is unrelieved the hydrocephalus will end fatally. Fortunately modern by-passing operations—in particular that of Torkildsen—offer reasonable prospect of cure. Gliosis causing narrowing of the iter may occur at any age, though it is somewhat commoner in children; the aetiology is obscure.

Inflammation is a common cause of hydrocephalus and usually results in matting of the meninges, though occasionally there may be obstruction of the iter by exudate. The meninges can be irritated by foreign particles—as shown by experiments with lamp-black and by the results of using thorotrast for ventriculography (now discarded). Meningeal fibrosis from lipoids may give rise to hydrocephalus in certain metabolic disorders. A similar reaction is excited by blood in the leptomeninges; this is a particularly important and probably common cause of hydrocephalus in infants who have suffered birth trauma. In adults, haemorrhage due to severe head injury and to the rupture of aneurysm or angiomatous malformation may lead to some degree of hydrocephalus. After intracranial operations persistent slight bleeding can give rise to the signs of acute meningitis and be the cause of extensive fibrous meningeal adhesions. Fibrous thickening of the meninges is a common sequel of bacterial infection, but in some cases, though the pathological findings are unequivocal, it may be difficult to identify its origin. In other cases meningococcal meningitis has been followed by severe hydrocephalus and death, yet only slight changes have been found in the meninges. Professor Russell regards this type of hydrocephalus as often obscure and difficult to explain. In discussing the aetiology of meningitis in infants, she mentions the

[1] *Observations on the Pathology of Hydrocephalus*. 1949, London: H.M.S.O.
[2] *Amer. J. med. Sci.*, 1902, **124**, 44.
[3] *Beitr. path. Anat.*, 1894, **16**, 1.
[4] *Denkschr. Akad. Wiss., Wien*, 1895, **63**, 71.
[5] *Arch. Neurol. Psychiat., Chicago*, 1942, **47**, 195.

important part played by less common organisms, such as *Bact. coli*, and in particular the effect of birth trauma in increasing the risk of meningeal infection.

"Otitic" hydrocephalus is a much favoured diagnosis applied to the syndrome of raised intracranial pressure and papilloedema complicating ear disease, without meningeal inflammation or brain abscess. It is assumed to be due to dural sinus thrombosis. Professor Russell examines this problem critically because of the conflicting evidence. She suggests that sinus thrombosis may be followed after an interval by a limited degree of hydrocephalus, that the ventricles may return to a normal size, and that the sinus may recanalize. Attempts to reproduce the condition experimentally were unsuccessful, and she thinks that it may be necessary for the thrombi to occlude the lacunae of the sinus and the mouths of cortical veins before a severe disturbance of the absorption of cerebrospinal fluid can occur. Whether or not tumours of the brain cause hydrocephalus depends on their location. Those in the cerebrum may so displace the medial edge of the temporal lobe(s) as to cause herniation through the opening in the tentorium. This compresses the mid-brain and the aqueduct, with consequent obstruction to the flow of cerebrospinal fluid not only from the third to the fourth ventricles but also from the infra- to the supra-tentorial compartments of the cranium, where it has to pass through the cisterns around the brain stem in the narrows of the tentorial opening. Gliomas of the brain do not metastasize to other parts of the body, but some of them spread through the cerebrospinal pathways; this meningeal gliomatosis gives rise to hydrocephalus and may cause difficulty in diagnosis, for it simulates chronic meningeal fibrosis.

Hydrocephalus may have far-reaching effects, particularly if slow to develop and in young children. Dilatation of the floor of the third ventricle causes enlargement of the sella turcica, so that a mistaken diagnosis of intrasellar tumour may be made. As a result of this pressure on the infundibulum Fröhlich's syndrome may appear, thus apparently justifying the diagnosis of pituitary tumour. In other cases pubertas praecox may develop, and this syndrome has been reported in association with such differing lesions as meningitis, tumour of the pineal body, and glioma of the floor of the third ventricle. The probable explanation is that all such lesions—hydrocephalus, tumour infiltration, or inflammation—cause a disturbance of hypothalamic control of gonadotropic hormones. The enlargement of the head by hydrocephalus has been recognized for centuries: similar pressure absorption of the base of the skull occurs, and often leads to the formation of deep pits from the pressure of small herniations of brain through defects in the dura mater. Less well known are the changes which Professor Russell describes in the ependyma, which may be destroyed in places, and the ventricle may be studded by minute granules, due to proliferation of the underlying glia. White patches may appear on the ventricular wall from replacement of ependyma by collagen. Occasionally the white matter may be split by the pressure of the retained cerebrospinal fluid, so that false diverticula are formed. Very rarely a similar mechanism leads to leakage of the ventricular fluid into the subarachnoid space, so that a "natural cure" results.

NURSING AS A PROFESSION

Quite early in the war the Royal College of Nursing set about the task of post-war reconstruction of nursing services. It appointed a Nursing Reconstruction Committee under Lord Horder's chairmanship, and reports on the assistant nurse, on the education and training of nurses, and on recruitment to the profession were issued in the ensuing three years. One question within the Committee's reference—the social and economic conditions of the nurse—was postponed because of the rapid changes taking place. Though stability has not yet been reached, a report, and a comprehensive one, has now been issued.[1] Everyone admits that advantage has been taken of the nurse's sense of vocation to her economic detriment. That a sense of vocation must attach to nursing is, of course, true. As Lord Horder says in his foreword, "Not all the factors which the Committee had to consider depend on material things. The prospect of a happy, useful, and expanding life for every nurse, with full opportunity for different types of capacity, does not necessarily depend on money." Yet the nurse's conditions of employment should compare favourably with those of other professions, not only for the sake of the nurse but so that recruitment may be maintained. The annual need for new recruits to nursing is the highest for any profession in which women engage—about 15,000. The only other profession which comes anywhere near this figure is that of teaching. Moreover, the demands of the national nursing service are made upon a diminishing pool: there are fewer women available of the recruitable ages, and nursing is in increasing competition with other callings, some of which demand the very qualities that are desirable in a nurse.

One difficulty is that, unlike entrants into most other professions, nurses give their services while they learn their jobs. The nursing service is very largely maintained by student nurses, of whom there are almost as many as there are trained women. Hospitals have regarded student nurses as a source of cheap labour,

[1] *The Social and Economic Conditions of the Nurse*. Report of the Nursing Reconstruction Committee of the Royal College of Nursing, Section IV.
[2] *British Medical Journal Supplement*, 1948, 1, 139.

and lectures and study periods have been subordinated to the routine work of the institution. It is this factor which has prevented the setting up of selection tests and has led many students to give up nursing. Whatever may have been the excuse for this arrangement in the past, with a hospital service run by the State there is no reason why the student nurse should continue to subsidize the State service at the expense of her own training. In a joint memorandum[2] two years ago the B.M.A., the British Hospitals' Association, and the Medical Superintendents' Society agreed that the pressure of ward work on student nurses should be reduced rather than the duration of training shortened. The present report lays down a double principle that a wide experience of practical work at the bedside is essential to the student nurse's training and that the hospital should neither presume nor impose upon the services of the student, though it will normally profit by those services.

Various proposals have been made for economizing in nurses. One is to hand over some of the nurse's duties to less skilled workers. It is a waste for a nurse to do domestic work, though she should be proficient in it; but domestic workers are not easy to obtain and perhaps cannot be expected to have the same sense of vocation as a nurse. Much was hoped for from the institution of the assistant nurse, but little success has so far attended it, perhaps because suitable assistant-nurse candidates have too often been accepted as student nurses in order to ensure more pairs of hands in the nursing training schools. Again, the title of "assistant nurse" is unpopular, and the position of orderly until lately has had more attractive rates of pay. More help may come from part-time nurses. In the last three years their number has risen steeply, until now it is said to make up 15 to 20% of hospital staff. There are familiar objections to part-time employment, but the Nursing Reconstruction Committee thinks that with sympathetic administration a real sense of loyalty can be built up among part-time workers.

The report enters, though not in detail, into the question of the pay and prospects of the nurse. It is considered that the present system of grading for hospital nurses, which assumes a ladder of promotion to the post of matron, is not necessarily in the best interests of hospitals. The prospects in each field of nursing employment should be sufficiently satisfying financially to attract and retain those who choose it on professional grounds. On the question of equal pay it is held that the "rate for the job," irrespective of sex, is the only equitable policy, but it should be coupled with dependants' allowances for those who have children to maintain. One last point in the Horder report deserves special mention—that the nurse, with her disciplined training and experience, can help to shape policy on questions of health and welfare, as well as in the wider field of public affairs. Many matrons and other members of the nursing profession have already made welcome contributions on local, national, and international bodies, but perhaps some of those lower in the hierarchy have felt rather intimidated by the discipline and rigidity of the profession. As the report states, a certain preparation is necessary for any participation in public affairs, but that applies to all who give their services on boards, or commissions, or councils, or committees, and not to nurses alone.

SIR WILSON JAMESON

Sir Wilson Jameson on reaching the age limit retired this week from the post of Chief Medical Officer to the Ministry of Health. He has held office at the Ministry for ten years, years of unprecedented strain and anxiety. Sir Wilson Jameson had by 1939 already made his name as Dean of the London School of Hygiene and Tropical Medicine, having been appointed to this post in 1931. It seemed likely to those who knew him and his work that he would remain attached to this institution until retirement. He was asked to become Chief Medical Officer of the Ministry of Health in 1940, and it must have been difficult for him to decide to leave an institution he loved and had served so well. Among the many motives that influenced him a strong sense of duty undoubtedly was one, and a powerful one. Sir Wilson assumed office at a time when many feared that bombing would bring in its train widespread outbreaks of infectious disease, when the hospital services of this country and especially of the big towns were being disrupted and had to be reorganized, when, in fact, central decisions affecting the life and health of the people had to be reached and acted on from week to week. Then after the publication of the Beveridge Report the Ministry had the task of drawing up plans for a national health service. Few men in the medical profession can have been subjected over the past ten years to such a continuous strain, a strain made not less in Sir Wilson's case when by virtue of his position he found the Ministry he served at times very much out of favour with the medical profession. That he has come through the past ten years with his reputation for fairmindedness and professional loyalty enhanced is a tribute to a great public servant and an eminent doctor. His services to the profession and the public have been recognized by fitting honours and awards. In his retirement from the Ministry of Health the profession will add to these its own good wishes in the work Sir Wilson has agreed to do for the King Edward's Hospital Fund.

WATER SOFTENING

An assessment of the merits and demerits of softening public water supplies must take diverse factors into consideration, and the Water Softening Subcommittee of the Central Advisory Water Committee is to be commended for the impartiality of its recent report[1] and for the thought given to the many different users of water. It is satisfactory that the committee has received no evidence to indicate that the consumption of either hard or soft water raised public health problems. Although this view has been held by many for some time, perhaps less will now be heard from those who blame their hard water for rheumatism and dyspepsia and their soft supply for rickets. The committee has assessed the amount of soap wasted by each consumer of a hard supply, and different methods of estimation all indicate a figure in the neighbourhood of 8s. a year. The waste of fuel due to scale formation in water-heating appliances has been considered in some detail, and the conclusion is that such waste, though appreciable, is not as great as was commonly believed, and in any case would be partly offset by the fuel used in manufacturing lime if a hard supply were softened by the lime process. The committee's observations on tea-making with hard and with soft waters are interesting. It appears that tea tasters have found difficulty in distinguishing between tea made with hard water and with water softened by lime. The experts are against making tea with water softened by the base-exchange process: they say that such water produces a darker infusion but one of less strength. The general conclusion is that hard water does not result in a significant waste of tea.

In considering the use of synthetic detergents in the household the committee has pointed out that if these were to replace soap in general use one of the chief arguments for the softening of public supplies would disappear, since there would be no saving in washing agent and no soap curd to prevent. But, the report adds, any conclusion about the future development of synthetic detergents can be drawn only with the greatest reserve. Industrial demand for softened water varies: some industries are indifferent to the hardness of water, but textile industries require soft water while brewers prefer quite hard water. In effect, the committee found that a supply of soft water is an asset to the domestic consumer, but in many cases not to the industrial user. It has not been found practicable to define the exact extent of reduction of hardness which should be achieved by softening. At the present time it is not possible to provide soft water throughout the country, but the water industry is to keep this aim in view.

[1] *Report of the Water Softening Subcommittee of the Central Advisory Water Committee*, H.M.S.O., 1949.

CHANGING VIEWS ON AORTIC STENOSIS

Aortic stenosis is often regarded as one of the rarer valvular diseases of the heart. In the past medical textbooks have not agreed about the aetiology and symptoms of the disorder but have concentrated on the physical findings necessary for the diagnosis. It is common teaching that aortic stenosis should be diagnosed only when in addition to cardiac enlargement there is a basal systolic thrill, an aortic systolic murmur conducted towards the neck, and a slow-rising pulse. Recent work, however, has suggested that dogmatic assertions about physical signs and lack of recognition of the symptoms have probably been responsible for the infrequent diagnosis of aortic stenosis. Kumpe and Bean[1] studied the clinical features of 107 cases of aortic stenosis proved at necropsy; they excluded all cases with signs of other valvular disease. They found, as have other workers, that the disease was commoner in males and that it occurred in the older age groups, most often in the seventh and eighth decades. Most of the patients who were admitted to hospital with cardiac symptoms complained of breathlessness and orthopnoea; other symptoms included cardiac pain, mental disturbances, vertigo, and syncope. Cardiac pain differed from true angina in that it appeared after, and not during, exercise, and it was not relieved by nitroglycerin. During observation in hospital some patients had attacks of sweating, cyanosis, and mental confusion; death was sudden in about one-fifth of all the cases.

Analysis of the physical signs showed that the accepted criteria for diagnosis were present in less than 20% of the patients, aortic systolic thrill and anacrotic pulse being found only in a minority. An aortic systolic murmur was usually present, though not always conducted upwards, and a systolic murmur at the apex was equally common. An almost constant sign on auscultation was diminution or absence of the aortic second sound; in the few cases in which this sound was loud it was thought to be due to conduction from the pulmonary base. It would appear from Kumpe and Bean's study that aortic stenosis should be considered if a precordial systolic bruit and an alteration of the aortic second sound are heard. Aortic thrill and anacrotic pulse, while providing useful confirmatory evidence, should no longer be regarded as essential signs in the diagnosis of aortic stenosis. Davies and Steiner[2] confirmed these findings in a smaller series of cases. They paid particular attention to the radiological diagnosis. It is known that aortic stenosis is usually accompanied by calcification of the valve cusps, which can frequently be seen on fluoroscopy. Davies and Steiner found that the calcified valves could more constantly be demonstrated by tomograms taken with the patient in the oblique position. By this means they were able to demonstrate calcification of the valves in all of the cases studied.

Conflicting opinions have been expressed on the aetiology of aortic stenosis. Mönckeberg[3] considered the calcification and scarring to be part of a generalized arteriosclerosis, but more recently the importance of rheumatism has been emphasized. Kumpe and Bean obtained a history of rheumatism in two-thirds of their cases. In a detailed pathological study of 200 cases of aortic stenosis Karsner and Koletsky[4] reported that with four exceptions all were rheumatic in origin. However, the age incidence of aortic stenosis and the greater frequency of the disease in males suggest that arterial degeneration plays some part, and Hultgren's work supports the view that aortic calcification is often purely degenerative in origin.[5] In reporting fifteen

[1] *Medicine, Baltimore*, 1948, **27**, 139.
[2] *Brit. Heart J.*, 1949, **11**, 126.
[3] *Virchows Arch.*, 1904, **176**, 472.
[4] *Calcific Disease of the Aortic Valve*, 1947, Philadelphia.
[5] *Arch. Path.*, 1948, **45**, 694.

cases of pure aortic stenosis under the age of 50 Kiloh[6] found no evidence that rheumatism was a contributory cause. Undoubtedly a number of pathological processes can end in aortic calcification, and, as Kiloh has said, long-term investigation of patients will be necessary to assess the importance of each factor.

INTRAVENOUS IRON IN ANAEMIA

Since Nissim[7] showed in 1947 that a solution of saccharated iron oxide could safely be injected intravenously many papers have appeared confirming its value in treating hypochromic anaemia resistant to oral medication.[8-12] In this number of the *Journal* Dr. A. S. Ramsey provides further proof of its efficacy. There are two groups of patients with hypochromic anaemia who may require parenteral injection of iron: a small number do not improve with large doses of iron by mouth, although there is no intolerance, and a greater number suffer such gastro-intestinal distress when taking iron by mouth that adequate dosage is impossible. In both the indication is now to supply the iron by intravenous injection. Iron injected intravenously is used almost quantitatively in the formation of haemoglobin, and in the adult 25 mg. of the element is required for a rise of haemoglobin of 1% on the Haldane scale. Govan and Scott[10] found that the requirements in pregnancy were greater, almost 40 mg. being necessary for a haemoglobin increase of 1%. The total dosage can be estimated from these figures, with the addition of 1,000–1,250 mg. to restock the depleted depots with available iron. There is general agreement that individual doses should not exceed 200 mg. of elemental iron.[9-11] Ramsey records 11 patients who were given 300–900 mg. in a single dose; all but one suffered severe reactions, usually marked by nausea, vomiting, diarrhoea, and collapse. A system of dosage commonly used is to give 30 mg. on the first day, 50 mg. on the second, 100 mg. on the third, and 200 mg. on the fourth; 200 mg. is then given either daily or at longer intervals until the estimated deficit is made good. Experience in the past two years has clearly shown that intravenous injection of saccharated iron oxide is a safe and valuable addition to the methods of treating hypochromic anaemia.

BLOOD FLOW IN MUSCLES

It is recognized that voluntary muscular action causes an increase in the circulation of the blood through the active muscles, but the influence on the circulation of electrical stimulation of muscles and the effect of paralysis on the circulatory response have been less extensively studied. Wakim and his colleagues[13] have investigated the effects on the circulation of percutaneous stimulation of muscle in normal subjects and in patients suffering from spastic and flaccid paralyses. They first calculated the circulation in the legs of resting subjects by means of venous occlusion plethysmographs. They then stimulated the muscles of one calf by condenser discharges of varying intensity applied through the skin. After 15 minutes of stimulation both extremities were again put into the plethysmographs and the blood flow was again estimated. In normal subjects they found that electrical stimulation of the calf muscles caused a consistent increase in the blood flow. In six of eight subjects the skin temperature fell, which suggests that the cutaneous blood was diverted to the muscles. In the unstimulated limbs there was no significant change in circulation. While in the normal subjects stimulation caused an average increase of 86% in blood flow, the average increase in circulation in the muscles of spastic patients was 111%. The difference was probably due to the fact that these patients could tolerate a greater intensity of stimulus than normal individuals. In some cases there were spontaneous movements in the unstimulated opposite limb, and this was held to account for the increase in blood flow which was observed. Temperature variations were inconsistent. It is of interest to note that there was a reduction of spasticity after stimulation. This suggests a field for further research into the effects of electrical stimulation of spastic muscles, since this has hitherto been regarded as tending to aggravate spasticity. The response of flaccid muscles to stimulation was slight or altogether absent, and circulatory effects were inconsistent: in some patients the blood flow through the muscles was increased, in others decreased. Wakim and his colleagues concluded that their study added further confirmation to the view that increase in blood flow is due to activation of muscles.

ANOTHER ANTIHISTAMINE FATALITY

A few weeks ago we referred[1] to the report from Dr. M. Tobias[2] of the death of a small child of 21 months from the accidental swallowing of six 100-mg. tablets of pyranisamine maleate ("anthisan"), and to that of Rives and his colleagues[3] of a similar occurrence in a child of 16 months who swallowed tablets of a different antihistamine substance, methapyrilene hydrochloride. Elsewhere in this issue Dr. A. A. Miller and Mr. E. Pedley describe a third accident, again in a child of 16 months in very similar circumstances. In this case, as in that of Dr. Tobias, death occurred 2–3 hours after the tablets were swallowed, whereas in that reported by Rives, in which the dose was only 100 mg., the child died 15 hours later. The symptoms were a profuse catarrhal discharge from the upper respiratory tract, with foaming at the mouth and nose. The convulsions which the child was believed to have had were probably asphyxial, due to the respiratory obstruction caused by the fluid; it is less likely that they were due to central excitation, since antihistamine substances cause mental depression. The fluid was so abundant as to suggest oedema of the lungs as the main cause of death. It is to be hoped that doctors will impress on their patients the danger of leaving antihistamine tablets within the reach of small children and that no more lives will be lost in this way.

[6] *Brit. Heart J.*, 1950, **12**, 33.
[7] *Lancet*, 1947, **2**, 49.
[8] Davidson, L. S. P., and Girdwood, R. H., *British Medical Journal*, 1948, **1**, 733.
[9] Slack, H. G. B., and Wilkinson, J. F., *Lancet*, 1949, **1**, 11.
[10] Govan, A. D. T., and Scott, J. M., ibid., 1948, **1**, 14.
[11] Sinclair, R. J. G., and Duthie, J. J. R., ibid., 1949, **2**, 646.
[12] McLean, M., *British Medical Journal*, 1949, **2**, 849.
[13] *Amer. J. Physiol.*, 1948, **153**, 183.

[1] *British Medical Journal*, 1950, **1**, 111.
[2] Ibid., 1949, **1**, 1098.
[3] *J. Amer. med. Ass.*, 1949, **140**, 1022.

REFRESHER COURSE FOR GENERAL PRACTITIONERS

INFANT FEEDING

BY

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Breast-feeding

Knowledge of infant feeding has much to contribute to the production of that everyday prodigy—a healthy happy child who is growing normally. For the mature baby breast-feeding provides the least risk to the child and the greatest ease to the mother. It is not always possible, but it should be tried, provided that the mother is not suffering from active tuberculosis or a psychosis. Occasionally some other illness—for example, cardiac failure or nephritis—is so severe that breast-feeding is precluded, or there may be overwhelming social contraindications associated with illegitimacy, but such exceptions are rare.

On the day of birth mother and child need rest, and it will be enough to put the child to the breast once or twice to encourage lactation and to teach the baby to suck. On the second day three or four short feeding periods are desirable, and on the third day the full number may be given. As the milk is unlikely to come in until the fourth or fifth day the baby will get only a small quantity of colostrum, which has little value as food and is not a useful source of antibodies in the human animal. This starvation is unimportant, but occasionally lack of water causes restlessness, crying, and fever on the third or fourth days ("inanition fever") (Fig. 1). The symptoms disappear rapidly when water is given, but they may be prevented by giving at first one and later two or three teaspoonfuls of tepid (but previously boiled) water at each feed until lactation is established.

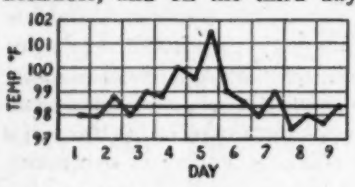


FIG. 1.—Inanition fever. Temperature chart of a "lazy feeder." Fluid administration was increased on the fifth day.

Both breasts should be used at each feed, different sides being given first at alternate feeds. Usually a child will take all he wants or can get from each breast in ten minutes or less. At first this period will be too long, and if a guide is needed one may allow one minute at each breast for each day—for example, on the fifth day five minutes on each side. The position adopted must be comfortable for both participants, otherwise the mother will become tense and tired, while the baby will become frustrated by his difficulties and the whole process will be jeopardized. The usual sitting position is perfectly satisfactory if the baby is securely cradled in one arm so that the other hand is free to guide the nipple, but sitting may be uncomfortable soon after delivery, and for the first feeds the woman will lie on her side. The mental attitude is as important as the physical: anxiety and fatigue cause poor handling and consequent feeding difficulties.

Small babies may need more frequent feeds than larger infants. If the child weighs less than 6 lb. (2.7 kg.) at birth he may be fed three-hourly for a month or so, but most babies soon become satisfied by four-hourly feeding. At first, a night feed is necessary if the family is to sleep, but after about six weeks infants usually sleep from half-past ten at night until five or six in the morning. Thus five feeds a day are usual from the second month. The 10 p.m. feed may be dropped when it is found that the child always has to be wakened for it. The amount of milk taken in a day varies from child to child. It will be seen in Fig. 2 that the amount remained constant for two months in a healthy baby who gained 3 lb. (1.3 kg.) in this period.

Recently, feeding "on demand"—that is, when the baby is hungry—has become popular. It is physiological and presumably satisfying to the baby, and it often works well if the mother is level-headed. Unfortunately, most people cannot always distinguish crying due to hunger from crying for other reasons, and ridiculous over-feeding may ensue. The mother is helped by being given a time-table for feeding, but she should be told that it is only a guide, and that if she knows that the child is eager for food half an hour before he is due to be fed she need not deny him. Commonly a baby wakes and cries once or twice a day long before a feed is due. Water given by bottle or spoon will usually pacify him. Drinks may be flavoured with concentrated orange juice, starting with 10 drops a day at 1 month and increasing to one teaspoonful at 3 months. If it is vomited it may be replaced by rose-hip syrup in similar amounts. Breast-fed babies do not, however, really need vitamin C supplements. Both breast-fed and bottle-fed infants need vitamin D. The Ministry of Food cod-liver oil compound may be given by spoon in the same amounts as concentrated orange juice; for ol. morrhuae the amount

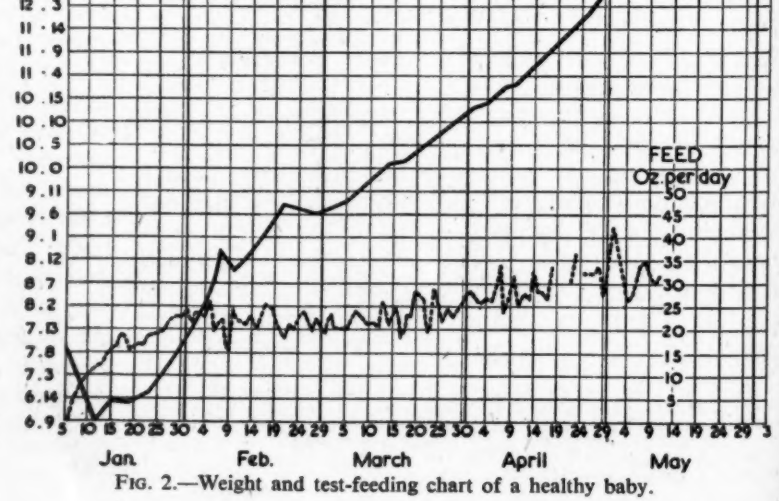


FIG. 2.—Weight and test-feeding chart of a healthy baby.

should be doubled. If they are not tolerated, 6 drops of halibut-liver oil daily should be placed with a glass dropper into the child's mouth during a feed.

Weaning

Solids may be given from the fourth month, or earlier if the baby becomes hungry two to three hours after a feed and the weight-gain is satisfactory. They should be given before the 10 a.m., 2 p.m., or 6 p.m. feed, depending on when the infant seems to be most hungry. At first one teaspoonful of a cereal which does not need to be cooked, mixed to a thin paste, is sufficient. Appetite will indicate when the amount should be increased; most babies eventually take about half a cupful. A month or so after cereal feeding has been started sieved vegetables should be given in a similar way before another feed. Those specially prepared for infants and sold in tins (for which points are not required) are satisfactory and save the mother trouble.

Infants do not want variety in their food, and there is no need to change the type of cereal, etc., but from the sixth month the range of foodstuffs should be widened progressively. Bone and vegetable broth, liver soup, prune purée, stewed apple, custard, tomato purée, and yolk of egg are possible additions, and from the seventh or eighth month small quantities of boiled fish, minced meat, grated cheese, bacon fried to a brittle state, or egg should be given at one meal a day. Rusks are appreciated in the second half of the first year. At 10 or 12 months the child will be having breakfast, midday dinner, and tea like his mother, but omitting the sharp sauces, pickles, fruit cake, and Christmas pudding to which she may be addicted. Sieving may be abandoned at this time, but mashing and mincing will still be necessary.

After the sixth month breast-feeding will gradually be dropped, usually because the amount of milk declines. When a feed is dropped, about 6 oz. (170 ml.) of boiled cow's milk or full-cream dried milk should be added to each meal. If the child will drink more, so much the better. The early morning breast-feed is usually the last to go, although a drink of orange juice and water or of milk is still likely to be called for by the vociferous infant when he wakes. To continue suckling into the second year is, however, harmless, provided that it does not interfere with the establishment of mixed feeding.

Bottle-feeding

Much of what has been said about breast-feeding can be applied to bottle-feeding; the differences lie in the bottles and the milk, not in the infant and his needs.

Feeding-bottles are of two sorts: those with two mouths and those with one. Either will do. The boat-shaped bottle is rather easier to clean with a bottle-brush. A few mothers do not realize the speed with which a vacuum is produced in single-ended bottles, and may have to be told to withdraw the teat frequently. Sucking on a collapsed teat causes air swallowing, a common cause of vomiting and discomfort. The infant's sleep depends on his post-prandial belch. Some air swallowing is inevitable: excess may be disastrous.

After use the bottle and teat should be rinsed thoroughly in cold water and then in hot, cleaned with a bottle-brush, and rinsed again. Ten minutes' boiling in a covered saucepan sterilizes bottle and teat. They should be left in the saucepan until needed and then removed with freshly washed hands. Immersion between feeds in 1% "Milton" is another useful method, and keeps the bottles cleaner and brighter in appearance than boiling.

As evaporated (unsweetened condensed) milk is nearly unobtainable in Britain at present, the materials available for bottle-feeding are fresh cow's milk and dried milk. In houses without refrigerators the latter is preferable.

Dried Milk

The array of different dried milks is bewildering at first sight, but they may be divided into: (1) separated milks, which are unsuitable for feeding healthy babies, though valuable in the treatment of certain conditions in which fat is not tolerated; (2) half-cream, humanized, or No. 1 milks which are used in the first three months; and (3) full-cream or No. 2 milks which are used thereafter. National Dried Milk is the cheapest, and is satisfactory for almost all infants. Occasionally a child is encountered who does better on a proprietary preparation, such as a humanized milk, in which the protein is modified in addition to the reduction of fat. I have not been convinced that proprietary half-cream milks are better than National half-cream, but it is only fair to say that this opinion is held by some people with much experience.

Dried milk and water are mixed in the proportion of one measure (about one teaspoonful) to 1 oz. (28 ml.), except with Allenburys' preparations, which are used one in six instead of the usual one in eight. For healthy babies over 10 days old there is no need to complicate the feeding by using other proportions.

Feeding is started then with half-cream milk, given at the same times as breast-feeds would be given. Water alone may be used for the first three days, then three-quarter strength half-cream milk to the tenth day, and full strength thereafter until the child is 3 months old. Half a teaspoonful of sucrose, glucose, or lactose (it does not matter which) is added to each feed in the second week, and one teaspoonful at one month. Sugar need not be added to full-cream milk.

The amount of milk needed increases in the first few days. As a guide one may say that the child should be offered $\frac{1}{4}$ oz. per lb. (15.6 ml. per kg.) weight a day for each day of his age—for example, at 4 days an 8-lb. (3.6-kg.) child needs $\frac{1}{4} \times 8 \times 4 = 8$ oz. (227 ml.) in the day. At 10 days the figure of $2\frac{1}{2}$ oz. per lb. (156 ml. per kg.) weight a day is reached, and this amount suffices until the weight is about 14 lb. (6.4 kg.), when the requirement declines to about 2 oz. per lb. (125 ml. per kg.). The calculation of feeds is simple enough—for example, a 10-lb. (4.5-kg.) baby aged 5 weeks needs one measure of half-cream milk to the ounce, with one teaspoonful of sugar to each feed. If he is sleeping through the night he will need five feeds a day at four-hourly intervals. The total amount will be $10 \times 2\frac{1}{2}$ oz. a day = 25 oz. (710 ml.) = five feeds of 5 oz. (142 ml.).

If there has been a period of malnutrition and the infant is underweight he will need relatively more food, and in these cases the expected weight should be used for calculation instead of the actual weight. The expected weight may be discovered by assuming that the birth weight should have been regained by the fourteenth day, and that 1 oz. (28 g.) a day should be gained after that for four months, when the rate declines gradually to about $\frac{1}{2}$ oz. (14 g.) a day.

Although modern dried milks prepared for infants contain vitamin D, it does not invariably prevent rickets, and all babies should be given fish-liver oil or concentrates of vitamins A and D. Vitamin C is essential to artificially fed infants, for storing and heating the milk destroy the anti-scorbutic factor. Fresh orange juice (1 oz.—28 ml.—daily), concentrated orange juice (one teaspoonful), rose-hip syrup

(one teaspoonful), and ascorbic acid (25–50 mg., dissolved in the feed immediately before it is given) are suitable. Small quantities of iron are added by the manufacturers to many dried milks and infant cereals, and nutritional anaemia is uncommon except in twins, premature babies, and infants who do not take well to mixed feeding and so live solely on milk and cereals. Such children should be given iron and ammonium citrate, 1 gr. (65 mg.) dissolved in water, prophylactically. This iron solution may be added to a feed, as ascorbic acid is, but the vitamin oils should be given separately, as they are apt to remain in the bottle as an oily residue.

Cow's Milk

Fresh cow's milk is pasteurized in the larger cities, but it should always be brought to the boil before it is given to an infant. This kills bacteria which may have got into it after pasteurization, and also modifies the casein so that it forms softer curds. The presence of large hard curds and, to a less extent, of excess fat causes the difficulties which may occur if a young infant is given unmodified cow's milk. It is therefore diluted. To make up for the reduction in food value, sugar is added just as it is to half-cream dried-milk feeds. In the first ten days equal parts of milk and water may be given, two of milk to one of water for the next ten days, and subsequently three to one until the change to unsweetened undiluted milk is made at 3 months. In hot weather or hot climates dilution (or the use of half-cream milk) should be continued for much longer. If the child is getting enough total food he may be given milk with a low fat content for an indefinite period without harm.

ROYAL SANITARY INSTITUTE CONGRESS

ASPECTS OF PREVENTIVE MEDICINE

The Royal Sanitary Institute held its annual Health Congress at Eastbourne during the last week in April. The delegates numbered 2,500; many Government departments, home and overseas, and some 900 local authorities were represented. Dr. C. Metcalfe Brown and Dr. J. A. Ireland attended on behalf of the British Medical Association. For its discussions the Congress divided into eight sections concerned respectively with preventive medicine, engineering and architecture, maternal and child health, veterinary hygiene, food and nutrition, housing and town planning, tropical hygiene, and hygiene in industry. There were also four conferences—for medical officers of health, engineers and surveyors, sanitary inspectors, and health visitors.

The General Practitioner and Prevention

The experience of the National Health Service Act figured largely in the discussions. In presiding over the Section of Preventive Medicine Professor JAMES MACKINTOSH (University of London) drew a sharp distinction between a health and a medical service. There was no broad conception of a national health policy, he said, either in the Act or in the plans put forward since the Act came into force. On the contrary, there was a remarkable tendency to split the rounded concept of national health into artificial segments. One example was "the persistent campaign to set up a self-contained industrial medical service, ignoring the family doctor on the one hand and the established public health officer on the other." Speaking later on this point, Professor Mackintosh said:

"Men and women in our industries are the same men and women who live in houses and take part in family life; only a small proportion of these workers are employed in great factories that provide organized medical services. It is clear that industries, large or small, create special hazards which require the attention of consultants with special knowledge of industrial medicine. . . . The vast majority of problems of health and sickness in industry, however, are not the obscure hazards but the simple everyday matters that require supervision on the preventive side by the health services and on the side of medical care by the family doctor."

Professor Mackintosh also had something to say about the overloading of the general practitioner. The famous Dawson report, in 1920, on future provision of medical and allied services, one of the finest contributions in any country to the problem of health centres, declared that preventive and curative medicine could not be separated on any sound principle. Everyone would agree, but nobody but a fanatic would suggest that these fields of study should be cultivated by the same person. Yet the Dawson report went on to say that preventive and curative medicine "must likewise be brought within the sphere of the general practitioner, whose duties should embrace the work of communal as well as individual medicine."

"Here," said Professor Mackintosh, "we come across a monstrous fallacy that because (as everyone would agree) the general practitioner should have regard for the preventive and social aspects affecting the individuals and families under his care, he should therefore be responsible for the community aspects of preventive medicine. But leaving aside academic fallacies, isn't it just plain common sense that when an epidemic breaks out, the general practitioners are extremely busy attending the sick and carrying out such measures of prevention as can be adapted to protect their patients and to prevent the spread of illness among them? They have neither the time nor the opportunity to grasp the situation as a whole, or to study the causes and progress of the epidemic as it affects the community, both the healthy and the sick."

Claims of the Public Health Service

An outspoken address was also delivered by Dr. H. C. MAURICE WILLIAMS (president of the Society of Medical Officers of Health), who presided over the Conference of Medical Officers. He acknowledged that there had been a substantial improvement in the medical staffing of hospitals, and that the team work should give a better and more equal distribution of essential services. But he added:

"Had we, as local authorities, been given the same facilities for submitting supplementary estimates running into tens of millions, there is little doubt that we could have provided the same excellent and comprehensive consultant service as that which is being formulated to-day. There are now consultants of fifty-seven varieties, yet the general practitioner is being forced by financial circumstances to undertake the care of many more patients than it is possible to deal with effectively. This state of affairs results in a lowering of examination and treatment and is already in some cases bringing the new service into disrepute, particularly amongst the middle classes."

Dr. Williams urged that the Public Health Service must stake its legitimate claims in this "Klondike" of modern medical administration. It was through the efforts of the public health authorities that the public conscience had awakened to the appalling conditions that prevailed in the practice of midwifery and the lack of antenatal supervision. Was there a danger that the present scheme would, by its split responsibility of control, encourage a return to some of the old failings?

"All authoritative bodies have advocated that normal domiciliary midwifery should be conducted by the qualified midwife. Nevertheless, under existing arrangements the medical practitioner is encouraged to re-enter this field, and will displace the midwife in many cases. Either a doctor is properly trained in this work or he is not, and it seems incomprehensible to me that the authorities should expect a practitioner of inferior experience to undertake this important work for a lower fee. It is, in my view, a grave reflection on central administrative wisdom and an injustice to the mothers of this country. The patient is seldom competent to judge the obstetric capabilities of her doctor, and is more influenced by what is commonly termed his 'bedside manner'—frequently a veneer of incompetency with a hope that, by amusing his patient, nature will effect a cure."

The local health authorities should have total responsibility for domiciliary midwifery. The consultant obstetrician should be employed on a sessional basis and carry out the supervision of clinic and emergency work on behalf of the local authorities.

On the subject of child care, he noted a "disturbing resolution" passed at the Annual Representative Meeting of the B.M.A. that all children should be referred back to their private practitioners in order that the latter might make

arrangements for conditions necessitating a specialist opinion or hospital treatment. The serious consequences of such a procedure were at once realized by the council of the Society of Medical Officers of Health, and after consultation with the Ethical Committee of the Association a modification of the resolution was obtained to the effect that this would apply only when the practitioner expressed a specific desire for these arrangements.

"One would have thought that the complete disintegration of the school dental service would have been sufficient warning that private practice is not yet sufficiently equipped with a clerical or follow-up organization to undertake the administrative machinery to carry out the detailed work connected with the school health service."

Exclusion of the G.P. from Midwifery

More was said on the subject of the general practitioner and obstetrics in the Section of Maternal and Child Health, where Dr. J. G. THWAITES (Brighton), as "a general practitioner interested in the contribution that I and my colleagues can make to the well-being of the maternity service," read an excellent paper. He was disturbed because, for various reasons, the family doctor was losing his traditional and rightful position as the family accoucheur. Except in certain specially designated hospitals, general practitioners could not follow their cases in the wards. If in future the number of maternity beds in public wards was increased, a proposal to allow general practitioners to work in hospitals would have to be considered seriously.

The exclusion of all but a few general practitioners from midwifery was the logical conclusion of the present policy. If that was so, let it be made clear. Perhaps it would not be too wide of the mark to say that eventually all medical obstetric practice will be carried on by specialists only, to the entire exclusion of general practitioners.

"I may even hazard a guess that in some quarters such an outcome is deemed desirable. With such infinite possibilities opened up for a really fine general-practitioner contribution to the well-being of the new maternity service, such an outcome would, in my judgment, be deplorable."

Dr. ARTHUR PURDIE (North Middlesex Hospital) suggested that the regional hospital board should be in control of maternity services, with its powers largely delegated to the hospital management committees, which would employ midwives and run local clinics in charge of general-practitioner obstetricians working under the general supervision of the consulting obstetricians of the hospital.

Professor HILDA LLOYD, president of the Section, spoke of the care of the expectant mother and her confinement as being, unfortunately, divided between the general practitioner, the midwife, and, when necessary, the hospital obstetrician. To a certain extent this might be inevitable, but it was surely the concern of those of them who had this branch of medicine at heart to try to bring into existence an obstetrical service for the country which embodied the best in each department, and to see that doctor and midwife alike were trained to a high level of efficiency for their exacting work.

Field Epidemiology and Research

A discussion on field epidemiology was opened by Dr. D. D. REID (London School of Hygiene and Tropical Medicine), who pointed out how the extension of the term "epidemiology" to include non-infectious disease had widened the scope of the medical officer of health. His work could be aided by modern statistical techniques such as sampling survey methods and mechanical tabulation of data. The application of these methods to data flowing from the new records of the National Health Service and from sources of information such as notifications and death certificates, and even the records of the local food office, should help in intimate field studies of the sick and healthy at home and at work. Dr. G. H. GIBSON (Leicestershire County Council) emphasized the importance of careful investigation of small outbreaks. With epidemiology and infectious diseases the first essential was to get rid of the idea that the work consisted mainly of the investigation of spectacular epidemics. Routine investigation of isolated cases and small outbreaks took up far more time of a health department and was more important for several reasons, sometimes enabling a larger outbreak to be checked in its initial stages.

In the Section of Hygiene in Industry, over which Dr. DONALD STEWART presided, the work of the Medical Research Council in occupational health was reviewed by an officer of the council, Dr. J. M. ROGAN. The cost of this research, he said, was not high, and the benefits immeasurably outweighed the cost. In spite of the straitened finance of the country, any large curtailment of the resources available for research in occupational health would be false economy, though this did not mean that every scientist should be given his head. Dr. Rogan likened medical research to a garden and the workers to plants. When plants grew well the less they were handled the better. Occasionally a good growth might become diffuse and some gentle pruning was necessary. To achieve harmony rare plants might from time to time have to be introduced. Weeds must be excluded, "and at times it may not be easy to differentiate them from other occupants of the garden."

Some studies on the cause and prevention of industrial dermatitis were presented by Dr. C. N. D. CRUICKSHANK (Industrial Research Unit, Medical Research Council). Cases certified as industrial dermatitis rose from 3,600 in 1939 to 10,500 in 1944, since when there had been a slight fall. The rise had been general throughout industries, probably the result of some social phenomenon. There was no simple method of prevention; protective clothing, use of cleansing agents, and more care in selection of workers were necessary.

Hospital Care for the Aged Sick

Dr. STUART LAIDLAW spoke on the care of the aged and chronic sick in Glasgow, where he is M.O.H. In that city, he said, there were 104,200 old persons. Prospects for hospitalization of those of them who needed medical attention were most unsatisfactory. Current figures showed that 408 were at present accommodated in the medical wards of Glasgow hospitals, a further 571 in sick-bay accommodation of welfare institutions, and 50 in private nursing-homes. In addition, 522 old persons requiring medical treatment were on the waiting-lists of former municipal hospitals and a further 100 on those of former voluntary hospitals. It would not be an overestimate to provide 1,800 beds for the medical needs of the old in Glasgow. The most reasonable solution would be to remove the care of the chronic sick and infirm from the regional hospital boards altogether, leaving them to deal with the acute sick for whom their hospitals had been principally designed, equipped, and staffed. For the old people some accommodation less elaborately equipped and expensively staffed than the modern hospital ward—something between the old people's home and the hospital—should be provided as part of the care and aftercare provision of the National Health Service Act.

The care and aftercare of the general patient, with special reference to mothers and children, was the subject of a paper by Dr. S. C. GAWNE (Lancashire County Council). There was much to be said in favour of the home for the treatment of these cases. Careful selection was necessary before hospital admission, and this called for a high degree of co-operation between hospital, local health authority, and family doctor. Here the family doctor was the king-pin. His was the decision on what form of care was in the best interests of the patient

Children exposed to tuberculous infection were the subject of papers by Dr. JOHN E. GEDDES (Birmingham) and Dr. J. S. G. BURNETT (Preston). Both urged the value of B.C.G. vaccination as an additional weapon for the protection of the child exposed to the tubercle bacillus, though this immunization did not justify the abandonment of existing measures of control.

The Health Visitors Conference was presided over by Prof. ALAN MONCRIEFF (University of London), who said that it would be a tragedy if almoners and health visitors ceased to play their respective parts and tried to do each other's work. It had been suggested that almoners should have more hospital training like that of a nurse, and that health visitors should have a university training in social science. Such a blending of functions in training would destroy the good in both professions.

The social survey by Dr. A. T. M. WILSON (Tavistock Institute) on psychological factors in family life has been widely quoted in the lay press. He referred to what he called the "atomization" of society—the inadequacy of kinship and neighbourhood and community relations and the functional isolation of the family—and asked what social services, working by what methods, to what extent, and at what points in the history of the family, were needed to reverse this trend.

Tropical Hygiene

The presidential address by Prof. B. G. MAEGRAITH (Liverpool) in the Section of Tropical Hygiene was on controversial aspects of malaria control. The present state of knowledge, he said, was inadequate, and only in general terms could the advantages and disadvantages of a given system of control be assessed. If good continuous control could be established over a wide area or an area protected by geographical barriers, it was probably worth accomplishing; but much was to be said against localized control in circumscribed areas, such as ports surrounded by neighbouring hyperendemic areas. The most serious disadvantage for the local population might well be the loss of acquired resistance to infection, or failure of its development. A complete localized control might leave the individual in the same position as the non-immune immigrant, open to the full severity of the disease if he became exposed to it outside the protected region. Professor Maegraith also touched upon the wider question of the increasing population pressure which might be expected to follow reduction of malarial morbidity and mortality. Dr. W. J. MAELOR EVANS gave an account of health problems in an over-populated area of Tanganyika and those attending resettlement of a section elsewhere.

Among many other subjects dealt with at the Congress were meat inspection, safe milk supply, hygiene in the bakery, the canning and meat products industries, the development of new towns, planning in rural areas, and various aspects of sanitary administration. In a paper on the use of colour in hospitals and clinics Mr. R. F. WILSON (Art Director, British Colour Council) suggested that the reactions of hospital patients should be obtained to wards coloured cream, rose or peach tones, light green, and light blue, his idea being that certain colours speeded recovery from illness.

THE IMPERIAL CANCER RESEARCH FUND

STUDIES IN CARCINOGENESIS AND GROWTH OF TUMOURS

The annual general meeting of the governors of the Imperial Cancer Research Fund was held at the Royal College of Surgeons on April 25, under the chairmanship of the Earl of Halifax, president of the Fund. It was announced that Lord Webb-Johnson has been elected a vice-president, as he ceased to hold the office by virtue of his presidency of the Royal College, and that Sir Cecil Wakeley had become vice-president *ex officio*. New representative governors were Dr. J. M. Mackintosh, nominated by the Royal College of Physicians of Edinburgh, Dr. A. A. Charteris, by the Royal Faculty of Physicians and Surgeons of Glasgow, Professor J. B. Buxton, by the Royal Veterinary College, and Professor F. A. E. Crew, by the Royal (Dick) Veterinary College at Edinburgh. Sir Henry Dale and Professor J. W. McNee are among the newly elected life governors. The financial statement showed that the Fund expended in 1949 the sum of £38,094. Contributions, excluding legacies, accounted for £10,723 of the income.

The report of the Director (Dr. James Craigie, F.R.S.) stated that during the year the scientific staff of seven, with two visiting research workers, had continued their researches in the same fields as before—the growth and progression of tumours, the biological and carcinogenic activities of azo-compounds, the oestrogen sensitivity of various mouse cancers, among others. Some of the work carried out was recorded in the *Journal* during last year, notably in the Imperial Cancer Fund Lectures by Dr. Craigie, Dr. C. H. Andrewes, and Dr. W. E. Gye, and also in articles by Dr. Ida Mann and others. Dr. Gye retired from the post of director during the year and has been appointed a member of the council in recognition of his long and distinguished services. He is at present in Australia.

New Microscopical Techniques

An interesting section of the report concerns the application of new microscopical techniques to the study of living malignant cells. Phase-contrast and ultra-violet microscopy have opened up new possibilities for such study. Under the ordinary microscope much important detail is invisible owing to the fact that living cells are transparent. The phase-contrast microscope translates differences in refractive index into differences of light and shade, thus revealing nuclear and cytoplasmic structures previously discernible clearly only by the complicated cytological techniques of fixing and staining, which kill the cells.

Again, the ultra-violet microscope, besides doubling the resolution obtainable with the visual-light microscope, is also capable of affording information concerning certain chemical constituents of cells, particularly the nucleic acids, which are of special importance because they have been shown to be intimately involved in protein synthesis. The possibility of demonstrating the intracellular distribution of these acids is dependent upon their property of exhibiting selective absorption of ultra-violet radiations. It has been generally assumed that cellular structures which exhibit strong absorption of wavelengths around 2,600 Angström units contain nucleic acids, but conclusive evidence to this effect has necessitated confirmation by microspectrographical analysis, and this has not yet been possible with living cells.

One of the visiting research workers, Dr. R. J. Ludford, working on the serial transplantation of tumours, has obtained the materials required for a comprehensive cytological study by phase-contrast and ultra-violet microscopy, and as a result it has been shown that in rapidly growing malignant cells considerable absorption of ultra-violet radiation of wavelengths around 2,600 Angström units is exhibited by the nucleoli and nuclear chromatin, and by mitochondria, microsomes, and the ground cytoplasm. In general, the more rapidly growing the cells the more intense is the cytoplasmic absorption. Both phase-contrast observations with visual-light and ultra-violet microscopical studies emphasize the complexity of the cytoplasmic structure of rapidly growing malignant cells. Phase-contrast microscopy has also been extensively used in the studies of tumour-cell survival. Altogether these new methods seem to offer some promise of extending the knowledge of living tumour cells under controlled physiological conditions.

Carcinogenesis

Another member of the scientific staff, Mr. H. G. Crabtree, has been working on the biological and carcinogenic activities of azo compounds. His work has raised the question again of the possible association of folic acid with cancer induction. Folic acid, in its relation to the cancer problem, has been widely studied during recent years in the United States, chiefly for the assessment of its therapeutic possibilities. Apart from these clinical trials there is strong evidence in the field of bacterial metabolism that *p*-aminobenzoic acid is concerned with the synthesis of folic acid, purines, thymine, and methionine, and that sulphonamides may inhibit reactions leading to the synthesis of proteins and nucleic acids. Though information on the folic acid requirements of rats is scanty, the haematological changes produced by sulphonamides and reversed by folic acid bear witness that it is essential to their well-being.

"In the light of this knowledge it is feasible to suggest a tentative hypothesis which co-ordinates the observations recorded. Appropriate diamines (or their oxidation products) arising from the reductive fission of azo-compounds may interfere with the function of enzymes concerned with folic acid synthesis, thus providing in the liver the initial derangement of function for the subsequent induction of tumours. If the azo-compound is potentially capable of liberating *p*-toluidine, the precursor of *p*-aminobenzoic acid, this process is antagonized by compensatory production of folic acid, which preserves a physiological normality in liver cells and permits normal growth, with the biological consequence of preventing the emergence of cancer."

An attempt has been made to produce gastric tumours in rats fed on a diet containing 0.5% of acetyl-amino-fluorine, which

it was thought might localize the carcinogenic action of this compound to the mucosa. But, although a number of rats have been treated in this way for more than eight months, none has so far developed any sign of a gastric tumour; the only stomach symptom has been a non-specific atrophic gastritis.

This annual report is very difficult to read, and one can only hope that the many lay subscribers, whose names cover eight pages, are satisfied without a non-technical interpretation of all this work.

NATIONAL INSTITUTE FOR MEDICAL RESEARCH

OPENING BY H.M. THE KING

The King, accompanied by the Queen, formally opened the new Institute of the Medical Research Council at Mill Hill on May 5. The ceremony took place in the Fletcher Memorial Hall, named after the first secretary of the council. After addresses of welcome had been read and presentations made, their Majesties were conducted on a tour of the building and were shown part of the work of the Institute.

Sir Charles Harington, director of the Institute, speaking at a preview on the day before the inaugural ceremony, said that the Medical Research Council was the oldest of the research councils set up by the Government, the others being the Council of Industrial Design and the Veterinary Research Council. The establishment of a central institute to be staffed by full-time research workers was one of the first projects undertaken by the Medical Research Committee on its appointment in 1913.

Recent Advances

During its thirty years' existence the Institute had been responsible for fundamental advances in all fields. In the investigation of virus disease there was the identification of dog distemper as a virus infection and the discovery of a method for its prevention by Laidlaw and Dunkin. Subsequently there was the discovery that influenza was a virus disease and the isolation of the influenza virus by Laidlaw, Andrewes, and Smith. The Institute's work in physiology was chiefly associated with its first director, Sir Henry Dale, and ranged from his studies in anaphylaxis to the extensive work on the chemical transmission of nervous impulses which gained him a Nobel Prize in 1936. Work on the chemotherapy of malaria, kala-azar, and other tropical diseases continued to be one of the main interests of the Institute.

The first isolation of a vitamin—that of calciferol—and its identification as the substance responsible for the antirachitic activity of irradiated ergosterol was also carried out by a team of workers in the Institute. Research into virus diseases remained in the forefront of the activities of the Institute, and the World Influenza Centre, housed in the building and operating in conjunction with, and under the auspices of, the World Health Organization, was studying the epidemiology of influenza.

Sir Charles Harington remarked that one of the greatest advances in medicine which had occurred in recent years was the development of important new physical techniques. The Institute's two electron microscopes were in constant use, and the use of radioactive isotopes was being investigated. In relation to pharmacology, Sir Charles recalled that the modern use of curare and curare-like drugs in anaesthesia owed its origin to the work of the chemists and pharmacologists of the Institute.

The department of experimental biology had been developed out of the department of endocrinology. It was largely concerned at present with an investigation into the factors affecting fertility. The Institute continued to be a centre for the maintenance of international standards for arsphenamines, vitamins, hormones, and other drugs. After the German occupation of Denmark in 1940 the Institute, at the request of the League of Nations, assumed and maintained until the end of the war the further responsibility for the supply of standards for antitoxins and tuberculin which had formerly been maintained at Copenhagen.

A full description of the new Institute building was given in the *Journal* last week (p. 1063). After the inauguration ceremony their Majesties were shown some of the laboratories. In the division of experimental biology Dr. A. S. Parkes showed the results of plumage tests in experimental work on endocrinology. In another laboratory demonstrations on trypanosomes, leishmaniasis, and filariasis were displayed, including live filaria and mosquitoes in different stages of development.

The World Influenza Centre showed the method of inoculating chick embryos. Also displayed here were a chart of the spread of the 1948 outbreak, as recorded in the Centre, and photomicrographs of the ordinary Group A and Group B influenza viruses together with the long filament type observed last year, which bears a serological relationship to Group A but differs from it morphologically. Dr. C. M. Chu is in charge of the Centre.

Their Majesties saw the electron microscopes (the Institute has two models, one German, the other American) and photographs taken with them, including those of the psittacosis virus and the smallpox virus. The mass spectrometer, an instrument built for the Institute and used for measuring the concentration of stable isotopes, was inspected and also a Tiselius electrophoresis apparatus.

BALY MEDAL FOR SIR EDWARD MELLANBY

At a meeting of the Comitia of the Royal College of Physicians of London on April 27 Sir Edward Mellanby was awarded the Baly Medal "for his outstanding contributions to the science of nutrition, that branch of physiology which he did so much to develop and adorn." The citation which accompanied the medal continued as follows:

"His early researches into the cause of rickets, begun at the end of the first world war, were soon crowned with success. His discovery of a fat-soluble vitamin necessary to prevent or heal rickets in puppies and children meant a contribution of the first importance both to scientific knowledge and to preventive and curative medicine. His investigations in the field of rickets did not stop with the discovery of the antirachitic vitamin. They became focused on the harmful effects of certain cereals on the calcification of bones. After many years of work he traced these effects to the presence of phytic acid in such cereals. This discovery of a substance present in common foods which can interfere with good nutrition paved the way to the recent conception of 'antivitamins.'

"The fat-soluble vitamin which prevented rickets was not at first clearly distinguished from another fat-soluble vitamin now known as vitamin A, which is primarily concerned with maintaining the integrity of epithelial tissues. Mellanby's name is best known in connexion with the antirachitic vitamin. He has, however, in recent years published important papers dealing with the influence of vitamin A on the growth of bone. He showed that a deficiency of this vitamin may produce a variety of neurological disturbances owing to the mechanical pressure of disordered bone growth on nerves at the points where they enter and leave the skull and vertebral column.

"His most recent work has dealt with the toxic effects on dogs and other animals of flour treated with agene. His demonstration that agenized flour causes canine hysteria has been followed up by work designed to isolate the toxic substance. He reported only a few weeks ago the isolation of a crystalline toxic substance from wheaten flour treated with agene.

"His researches have led him into other fields in which he has made important contributions—for instance, the metabolism of alcohol, the experimental production of goitre, and the treatment of hyperthyroidism in man.

"This incomplete list of investigations indicates by itself the outstanding quality of his contributions to physiology and medicine. When it is remembered that for 16 of the past 17 years much of his time was spent in administration as secretary of the Medical Research Council, it becomes even more apparent that he is a most worthy recipient of this award for his services to physiology and his work on nutrition, with particular reference to the accessory food factors."

NEW NEUROSURGICAL THEATRE AND NEURO-RADIOLOGICAL DEPARTMENT AT MANCHESTER ROYAL INFIRMARY

[FROM A SPECIAL CORRESPONDENT]

The new operating and *x*-ray diagnostic units for neurosurgery opened at the Manchester Royal Infirmary by Lord Webb-Johnson on Wednesday, May 3, are indicative of the particular needs of modern medicine. The requirement is to furnish the different specialties with the working conditions and the work-rooms that they require. Neurosurgery, for instance, has to be particularly well protected against wound infections because of the relatively long periods during which the wound is open and the brain exposed. It is undesirable, therefore, that this sort of work should share a theatre with those doing other kinds of surgery. The fact that they can so share—and did so in Manchester for many years—without frequent disaster is a tribute to the techniques and disciplines of operating-theatre staffs and to the powers of anti-infective agents. No precautions will ensure absolutely against infection, though some distance has been traversed towards that ideal when each surgical unit has an operating suite of its own so that the immediate and variable bacteriological history of the operating-room is known to the surgeon.

The new unit was decided upon some years ago by the board of management and work on it was started before the Health Act came into force. It originated in a far-seeing move by what might be called "the Old Board" to use for a special purpose the greater part of a legacy of £100,000 left to the Manchester Royal Infirmary by Mr. Fielden. The purpose was to give the university units in the Royal Infirmary working conditions such as might assist them in good and productive work. Some of the money was allocated to the construction of work-rooms for research in medicine, surgery, neurology, and cardiology, some to the new units here described.

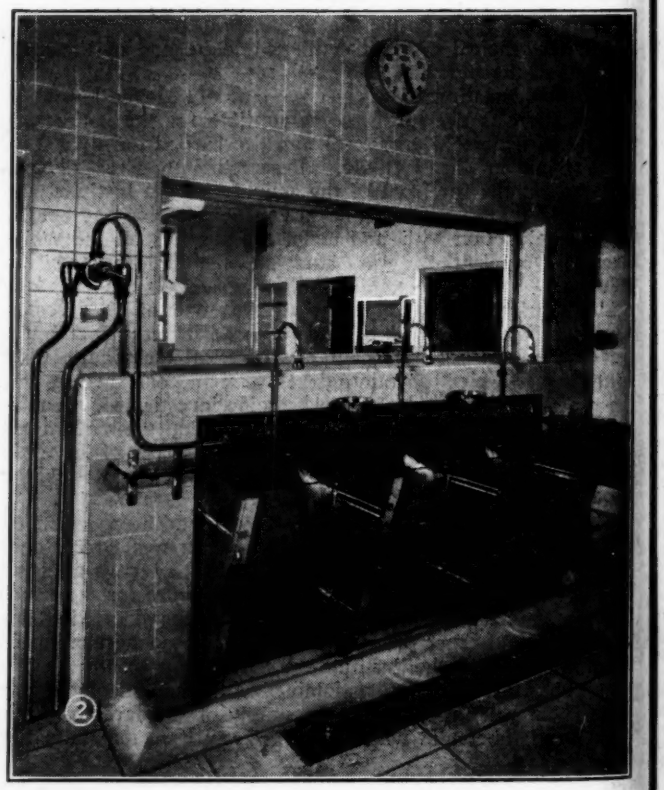
Because of delays and rising costs the original sum was eventually exceeded, but the project which came to fruition was a fine conception. It also furthered the policy that however much a hospital was a teaching hospital with the strongest university links it still had a function which was primary and anterior to its educational commitments—namely, the provision for the patient within its walls of as good specialist services as possible. The new neurosurgical theatre is not of eccentric design. The architect, Sir Hubert Worthington, assisted by Mr. T. W. Sutcliffe, has created a pleasant building. Affixed to the operation-rooms is a building for neuro-radiology. The increased use of surgical means of radiodiagnosis calls for geographical proximity between the two departments. At first sight it seemed that a very small *x*-ray unit was all that was required, but on second thoughts it proved that this would be uneconomical. If the unit could give all the radiological assistance that might be required not only for surgical but for medical neurology its utility would be greater.

A survey of the neuro-radiology carried out by the central *x*-ray department of the hospital some time ago showed that, although the number of patients examined was no more than one-tenth of the total, the time spent on them accounted for rather more than one-quarter of the whole. Active neurological departments therefore place a heavy burden on the radiological staff, a situation best met (as with the operations themselves) by giving them rooms of their own. The increasing part played by the radiologist himself in carrying out angiography and encephalography also calls for revised working conditions, and these, it is hoped, have now been given.

Theatre Planning

The whole building embodies the latest ideas in theatre planning. Operations on the brain often take many hours and make special demands. Everything possible must be done for patient, surgeon, assistants, and nursing staff. A special feature in the plan is the external corridor that leads to the surgeon's room, the visiting surgeons' room, the theatre sister's room, and the nurses' room, so that all concerned pass direct into their changing rooms and thence into the theatre for the operation without going through the other parts of the unit. The nurses have been given a particularly attractive room.

The surgeon's wash-up trough was specially designed (Fig. 2), with foot-operated taps, a sloping glass anti-splash front, and sterilized water laid on; a control window above the trough gives the surgeon a full view of the theatre. On the left are the sterilizing-room, with the sterilizers set flush, their "works" being in a chamber behind, with outside access for workmen.



The instrument cupboard opens into the theatre and into the sterilizing-room. Separated from the sterilizing-room by a terrazzo screen is the "dirty" wash-up room, with its sinks. The patient comes from the adjacent wards through a wide corridor into the anaesthetic-room, and thence into the theatre.

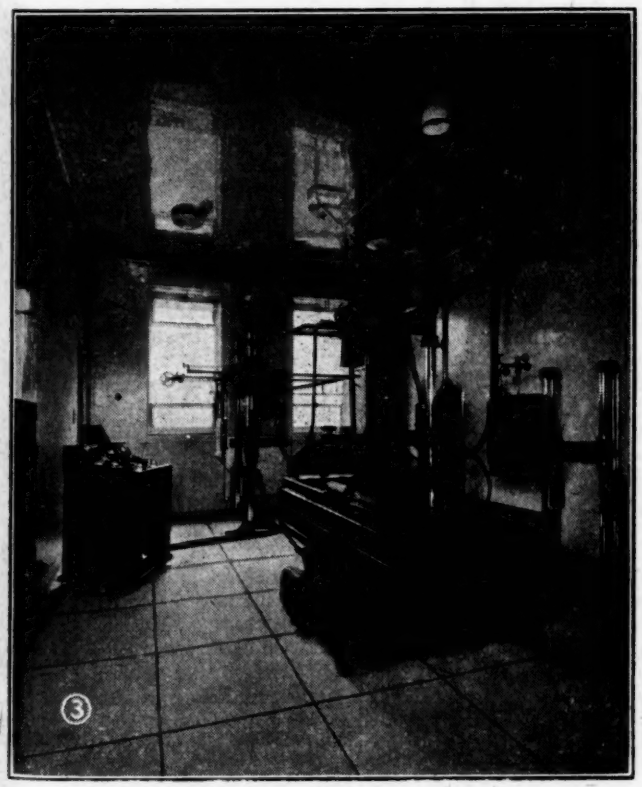
The theatre itself (Fig. 1) is tiled with restful pale-green tiles from floor to ceiling. The floors are terrazzo. The recessed *x*-ray viewing screens, lit from behind, are unusually large to suit the special needs, and the electric control panel is recessed on the other side. The lighting fittings, the theatre operating "chair," and all other equipment are satisfying in their functional rightness.

Provision has been made for the housing of an electro-encephalographic machine for electro-corticography during operations (Fig. 4). In this regard the new six-channel machine designed especially for the hospital by Ferranti, Ltd., and presented by Sir Vencent de Ferranti to the surgical and medical neurological services should prove useful. The Ferranti machine has, as might be expected, some new features.

The Rothwell system of hot and cold sterilized water, utilizing waste condensate from the hospital heating system, has been installed, as has air-conditioning. The Rothwell system was described at length in the *Journal* of April 15 (p. 896). Piped gas and oxygen have been led to the operating, anaesthetic, and wound-dressing rooms. Suction points have also been provided.

There is a special room near the entrance to the theatre, where patients are brought in their beds from the wards to be "dressed" after the operation, and where minor operations on infected cases can be performed.

The *x*-ray department (Fig. 3) is entered by a separate wide corridor opening into a waiting-hall, which is full of light and has cream-tiled walls. Off it open corridors leading to the two radiographic rooms, staff rooms, dark-room, wet film viewing-room, and dry film viewing-room. One radiographic-room (skull-room) is tiled and suitable for minor operations such as ventriculography: there is direct access to it from the anaesthetic-room. The second radiographic-room is equipped for general radiography and fluoroscopy. The equipment is all of the latest type and "through tanks" from the dark-room to the skull-room and wet film room allow films in the process of fixation to be examined by the radiologist actually undertaking the angiography or encephalography.



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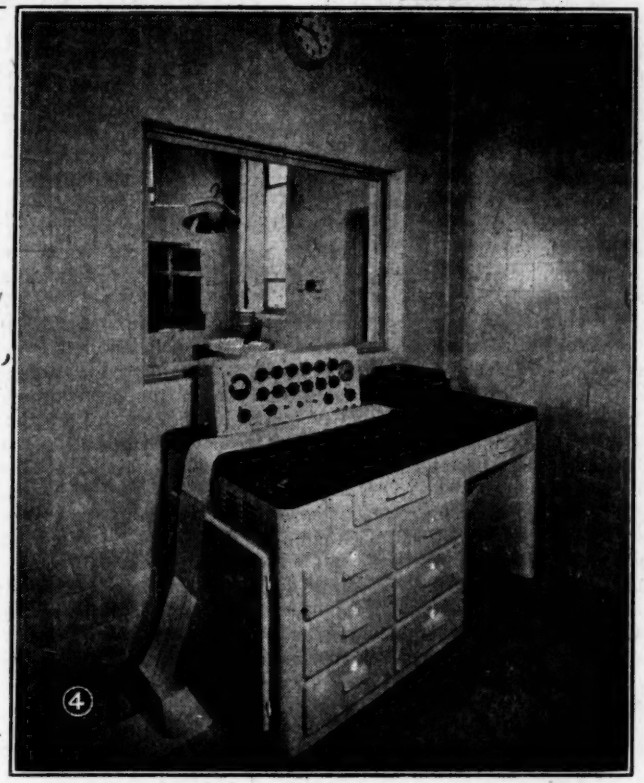

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The photographs are by Stewart Bale, Ltd.

Reports of Societies

ULCERATIVE COLITIS

At a meeting of the Medical Society of London on April 3, with Mr. L. E. C. NORBURY in the chair, the subject of discussion was "Ulcerative Colitis."

Dr. T. L. HARDY (Birmingham) reviewed the various aetiological factors which had been suggested from time to time as responsible for ulcerative colitis. To-day there was good reason to believe that it was not primarily an infective disease, specific or non-specific, and that the part played by micro-organisms, important though it might be, was by means of secondary invasion. He found it difficult to accept the view that it was invariably a psychosomatic disease depending on emotional stimuli transmitted through the sacral outflow. Present knowledge suggested that, like peptic ulcer, it was a stress disease, with multiple aetiological agents, of which emotional episodes were the most obvious and perhaps the most important. Respiratory and other infections might play a part, and probably endocrine errors. The reason for localization to the colon remained obscure.

The death rate was high in all recorded series, and in those, including his own, which had been followed up for a ten-year period it amounted to from 25 to 50%. The disease was mainly one of young adults. It was rare after 40 and was apparently very rare in children. The course was prolonged and almost always unpredictable, with remarkable fluctuations from week to week. He doubted whether the word "cure" could ever be used in this disease; the tendency to relapse remained.

The basis of treatment was prolonged rest in bed, an ample high-calorie, high-protein, and low-residue diet, abundant fluids, and iron and blood transfusion. He gave some account of

experience with the recent antibiotics, chloramphenicol and aureomycin, of which a supply had been obtained from the Clinical Trials Committee of the Medical Research Council. No final conclusions could be drawn. They were justified only in saying that these antibiotics produced a quicker and more pronounced effect than others on the temperature chart, the stools, and the proctoscopic appearances. This was doubtless owing to their wider range of activity and their lessened tendency to provoke resistance. There was nothing yet to warrant any greater hope than that in these new agents there would be better means of controlling secondary invasion and of making surgery safer.

In conclusion Dr. Hardy discussed briefly the indications for, and the results of, ileostomy. The recent development in America of a bag which could be attached round the stoma with watertight cement had removed one of the chief drawbacks to ileostomy—namely, difficulty in the control of the discharges. He was convinced that ileostomy allowed of a far more satisfactory life than was usually obtainable by medical means.

Since 1946 there had been 64 cases of severe ulcerative colitis treated in his unit; 20 had undergone ileostomy, with one death, probably from rapid salt depletion. Of the 20, so far nine had undergone colectomy, with one death from unsuspected hepatic disease, and two had had a final excision of the rectal stump and anal canal. Ileostomy should be considered in cases of ulcerative colitis which had resisted medical treatment for, say, six months.

Surgical Aspects

Mr. BRIAN BROOKE, Dr. Hardy's colleague, discussed some of the surgical aspects of the cases which had passed through the unit. He was followed by Mr. MICHAEL SMYTH, who said that he was definitely of opinion that surgical treatment should be undertaken more often in cases of ulcerative colitis. This applied not only to the acute cases but to many of the so-called chronic type with relapses. Ileostomy in acute cases was a life-saving operation, but unfortunately in such cases the surgeon was not called in until "the shadow of the undertaker hovered on the doorstep." Naturally the physician recoiled from the thought of ileostomy for his patient, and the patient from the thought of an artificial anus. A colostomy could be controlled to a large extent, but with an ileostomy the motion was fluid or at best semi-fluid, control appeared to be out of the question, and there was the added drawback of acid digestion of the skin.

Appendicostomy was as dead as the dodo, though some surgeons still claimed success for it. He had experience of three cases in which it had been successful, but the operation had been done in the first week of acute illness. Appendicostomy was useful only as an opening for flushing out the large intestine; it did not provide drainage nor did it cut off the motion from the large intestine. Caecostomy was little better than appendicostomy, for the same reason. Even when the knuckle of caecum was taken on to the surface it provided only partial drainage of bowel contents. Ileostomy cut off completely the current of small-bowel contents, preventing access to the large intestine. In fulminating cases he did only the simplest of operations—a midline incision between umbilicus and pubis, under local analgesia supplemented if necessary by a little thiopentone. A healthy loop of small intestine near the caecum was brought out to project 3.5 to 5 cm. above the skin. At Queen Mary's Hospital, Roehampton, they had tried every conceivable solution of the most recent drugs, but none seemed to have any selective action, so that they used normal saline as an irrigation.

Ileostomy in such cases saved lives, but it might have to be a permanency. Closure and restoration to normal should not be attempted within less than a year, and the criteria for closure were most stringent. Some people believed that ulcerative colitis began in the rectum and spread upwards; others that the disease began in the colon and sigmoid. On sigmoidoscopy there should be no signs of ulceration or pseudo-polyposis; in fact, there should be an absence of hyperaemia or oedema. *X*-ray examination after a barium enema should disclose an intestine free from stricture—one that showed haustration and distensibility. When the barium revealed a plain outline—the "lead-piping" type of intestine—the outlook was not favourable, though cases of this kind had been known to recover. It suggested that the muscularis mucosa had undergone infiltration and fibrosis and might have reached a stage at which the condition was irreversible. This was why he was so much in favour of early ileostomy to prevent such changes taking place. Sometimes haustration was not a reliable sign; although there was definite haustration, the continued passage of blood and pus sometimes led to colectomy, and the excised colon showed almost complete destruction of mucous membrane and muscularis mucosa. It had to be remembered that the muscles of the outer coats of the large intestine were, according to Sir Arthur Keith, in the aggregate as large as the ordinary arm biceps, and in some cases they might still be unaffected. An additional advantage of the double-barrelled ileostomy was that the faecal stream could be turned into the distal limb, and if the colon reacted normally, then this was the final test of all.

Indications for Colectomy

In conclusion Mr. Michael Smyth said that following ileostomy the patients improved and put on weight—in some cases becoming almost too obese; but while the patient seemed cured the disease persisted, quiescent perhaps for a time, but with occasional exacerbations, leading to such complications as arthritis. The condition of pseudo-polyposis in the colon became a serious matter in the course of time. Reports from different clinics showed that in this condition cancer might appear at about the eighth or ninth year from the start of the disease. The carcinoma which supervened was of a rapidly progressive type; reports from home and abroad suggested an incidence of cancer which might be as high as 20%.

The reappearance of blood in the stools and of a filling defect on *x*-ray examination provided strong indications for colectomy. This could be done in several stages, but if the patient was well enough a colectomy down to the recto-sigmoid area could be undertaken in one stage. It might be that the rectum would also require removal, but this should be avoided if possible. Dilatation would prevent stricture, and treatment of diathermy should be instituted on any sign of polyposis. Operation for anastomosis of the ileum to the anus had been advocated, but Mr. Smyth said he had had no experience of this, and, judging by reports from one American source, the undertaking was, to say the least of it, hazardous.

When the patient had to be left with a terminal ileostomy there were operations, notably that advocated by Dragstedt, in which the ileum was brought out to the extent of 5 to 7.5 cm., and covered with a skin graft. He and his colleagues had recently been doing such operations at Queen Mary's Hospital, Roehampton, and so far were pleased with the results. An artificial anus, no matter how fine the apparatus or how well accommodated the patient, was a dreadful handicap.

General Discussion

The PRESIDENT said that any form of treatment appeared to do good in these cases to start with, but afterwards they relapsed. The condition was one for collaboration between physician and surgeon. Early medical treatment could help a great deal.

Dr. AVERY JONES said that personality factors were important. The people who suffered from ulcerative colitis were usually vulnerable to the ordinary difficulties of life. They were often particularly dependent on a relative, and with the loss of that relative their suffering was much greater than that of a more independent member of the community. They were more sensitive and felt more acutely slights and rudeness. They were non-aggressive, extremely scrupulous, and felt a sense of guilt. The tidiness of the lockers of ulcerative colitis patients in hospital was noteworthy. He believed that very simple and understanding psychotherapy by the physician would be helpful.

Mr. R. S. CORBETT said that when a patient once had established ulcerative colitis, involving the major part of the rectum

and colon, there was little chance of a return to normal, whatever form of treatment was adopted. Dr. J. LIVINGSTONE said that there were two types of colitis: a dysenteric type, which started suddenly and sometimes became progressively more acute, in other cases becoming chronic and settling down to ulcerative colitis as they knew it, and another more benign type with an insidious onset. He had seen 14 cases of the acute dysenteric type; the majority of these patients had died. His own feeling was that in these cases ileostomy should be undertaken in the first fortnight.

Dr. J. PAULLEY agreed with Dr. Avery Jones about the personality pattern in these cases. In dealing with them by psychotherapy the chief success was obtained in young men, next in middle-aged men, next in young women, and the poorest results were in middle-aged unmarried women. Mr. DICKSON WRIGHT said he had always thought this to be an allergic disease. Every case he saw had had long spells of medical treatment. He thought that removal of the colon was desirable in view of the incidence of carcinoma.

Dr. HARDY, in reply, said that he did not believe the disease to be precancerous. He had now seen well over 300 cases and only three of malignant disease, two of them not in his own series. He also contested the idea of a specific personality; similar personality traits were recognizable in the old cases of mucomembranous colic, now almost unknown, and also in Crohn's terminal ileitis.

PARATHYROID AND PANCREATIC TUMOURS

At a joint meeting of the Liverpool Medical Institution and the Manchester Medical Society at Liverpool on March 2 Professor JOHN MORLEY read a paper on "Endocrine Tumours of the Pancreas and Parathyroid Gland."

All six patients from whom a single parathyroid adenoma had been successfully removed had showed some degree of generalized osteitis fibrosa, though none of them had urinary calculi or calcification of the kidneys. It was noted that four of the six patients had an osteoclastoma of the jaw, and it was suggested that such a finding should always be followed by an estimation of the serum calcium and phosphorus. In a seventh patient with the characteristic changes in the skeleton and in the serum calcium no tumour was found, though there might have been one in the anterior mediastinum that escaped detection owing to failure to split the sternum.

In the great majority of patients with parathyroid adenoma a single tumour was present. In not more than 6% of cases were there multiple adenomata. The tumours occurred much more commonly in the inferior than in the superior parathyroids. When not located in the normal position of the parathyroids the tumours were most commonly found in the anterior mediastinum. They might arise at any age, but were commoner in females than in males in the proportion of 3:1. While generalized osteitis fibrosa cystica was the commonest clinical manifestation of these growths (often with spontaneous fractures), calculi were often found in the urinary tract. The diagnosis was confirmed by a serum calcium of over 12 mg. per 100 ml. with a serum phosphorus reduced below 3.5 mg. per 100 ml. The operative technique was described and the differential diagnosis of the condition discussed.

Insulin Adenomata

Professor Morley then reviewed four patients from whom he had removed insulin adenomata of the pancreas. In three of these patients the tumour was single, small, and situated in the tail of the pancreas; in one there were five tumours. All were benign. Two of the four patients had been diagnosed as epileptic for some years, and in two of them cerebral tumour had been suspected. Two of them had on occasion been regarded as suffering from alcoholic intoxication. Benign insulin adenomata were single in 88% of cases and multiple in 12%. The tumours might be found in any part of the pancreas and not predominantly in the tail. Less than 10% of all insulin tumours were malignant.

The diagnosis rested on Whipple's triad of symptoms: (1) nervous (or occasionally gastro-intestinal) attacks in the fasting state; (2) a fasting blood sugar of 50 mg. per 100 ml. or lower; (3) immediate, or almost immediate, relief following the injection of glucose.

The nervous symptoms included confusion, convulsions, coma, or collapse, and occasionally there were outbursts of meaningless laughter. These symptoms were apt to bring the patients to neurological or psychiatric clinics, and it was of great importance that the possibility of hypoglycaemic manifestations of insulin tumours should be borne constantly in mind. The results of operative removal of these tumours were dramatic and almost always resulted in a complete cure.

Correspondence

National Institute for Medical Research

SIR,—To the excellent account of the National Institute for Medical Research given by Professor C. Lovatt Evans should be added the fact that the original conception of the National Research Fund was due to Lord Addison working with Lloyd George on the National Health Insurance scheme.—I am, etc.,

Horley, Surrey. LEONARD HILL.

Caesarean Section under Spinal Analgesia

SIR,—In assessing the safety of any anaesthetic procedure it is important to hear of failures as well as successful series of cases. The latter are recorded more willingly than the former, and we must therefore be grateful to Dr. A. H. C. Walker and Mr. Stafford Matthews (April 22, p. 938) for their courage in reporting two tragedies in African women from the use of a spinal anaesthetic for caesarean section. It would have been even more valuable if details of administration and the position of the patients had been included, since the rapid onset of collapse ("10 seconds" and "immediately") suggests a direct action of amylocaine on the medullary centres rather than any fall in peripheral blood pressure.

Obstetricians who have commonly administered spinal analgesia for caesarean section and instrumental deliveries are generally convinced that with a reliable technique there is virtually no danger; and surgeons who have practised in West Africa recognize the value of this form of analgesia for many different operations on the local population. It would indeed be a pity if spinal analgesia for caesarean section stood condemned as the result of faulty technique in its administration.—I am, etc.,

Birmingham. W. G. MILLS.

SIR,—Dr. A. C. H. Walker and Mr. Stafford Matthews (April 22, p. 938) are to be congratulated on their frankness in reporting two cases of death under spinal analgesia followed by post-mortem caesarean section. However, I feel that some comment is necessary, as I believe that these deaths are preventable. Though most authorities to-day would probably agree that skilled modern general anaesthesia is usually preferable, there remain occasions when spinal analgesia, properly used, may be safer for both mother and baby than general anaesthesia by untrained anaesthetists.

The factors on which safety depends have been described already in these pages by Mr. Ballantine and myself (January 22, 1949, p. 153) and I shall not repeat this discussion in full. However, there are several points which require comment. "Stovaine" was abandoned long ago for infiltration analgesia on account of its irritant properties, and this scarcely seems a recommendation for intrathecal use. I believe that the dose used was in any case rather large. For reasons not yet fully determined a given dose of any analgesic will produce much higher levels of analgesia and motor block when given to a patient at term than when given, say, to the same patient in the non-pregnant state. Thus for a similar patient the dose required for caesarean

section is scarcely more than half that required for, say, a hysterectomy. As previously described, the danger of a high block in cases undergoing caesarean section lies in the fact that when most of the intercostal nerves are paralysed, and at the same time the diaphragm is splinted by the enlarged uterus, the patient suffers from what is virtually more or less complete respiratory paralysis. The use of the Trendelenburg tilt only aggravates this by increasing the weight resting on the diaphragm. I have seen this situation develop on several occasions, not only in connexion with caesarean section. In one instance the patient had a large ovarian cyst and was operated on unden spinal analgesia, in another it was a case with greatly distended abdomen in which curare was used. In all these cases the first sign of trouble was the inability of the patient to breathe, and in all the inflation of the patient's lungs with oxygen until the distension was removed from the abdomen resulted in uneventful recovery. The striking fact was that the onset of signs of collapse in these cases was more rapid than is the case when, for instance, trouble is due to respiratory obstruction.

I feel that in addition to the use of a minimum dose for caesarean section under spinal analgesia the rapidly acting drugs such as stovaine and procaine are better avoided. With nupercaine and amethocaine the onset of any intercostal paralysis (which ought to be limited to the lower intercostals only) is slower, and therefore such sudden catastrophes as those reported are unlikely to occur. In any case it is wise to have a machine capable of supplying oxygen standing ready in case of need. Ordinary artificial respiration is likely to be quite useless in the circumstances described.—I am, etc.,

Sheffield. FRANK L. ROBERTSHAW.

SIR,—Gynaecologists and anaesthetists will be grateful to Dr. A. H. C. Walker and Mr. Stafford Matthews for their article in the *Journal* of April 22 pointing out the possible dangers which may arise if spinal analgesia is given to unsuitable patients for the operation of caesarean section. There are, however, several matters in the article which require comment from the point of view of the anaesthetist, as it would be unfortunate if the impression gained ground that the mortality rate of this anaesthetic technique in caesarean section approached two in twelve.

There are legitimate grounds for criticizing this choice of anaesthetic for patients in an exhausted state, suffering in addition from anaemia, malnutrition, and a blood pressure of 100/64 mm. Hg. Then most anaesthetists would regard 2 ml. of amylocaine hydrochloride ("stovaine") as excessive. The authors do not state whether they used Barker's solution of 5% stovaine in 5% glucose solution, or Chaput's formula consisting of 10% stovaine in 10% sodium chloride solution. The recommended maximum dose of the former is 2 ml. and of the latter 0.8 ml., and this would be expected to produce analgesia as high as the fifth thoracic root in a full-sized man. It is well known that pregnant women, even in good condition, should receive a somewhat smaller dose of drug than normal patients.

In the cases reported it appears that the large doses of stovaine injected, being strongly hyperbaric (Barker's solution, specific gravity 1030; Chaput's solution, specific gravity 1080), rapidly ascended in the theca and produced respiratory paralysis by action on the intercostal and phrenic nerve roots. This would be accompanied by profound vasomotor collapse and hypotension from blocking of the white rami communicantes conveying vasomotor impulses to the whole body.

Comment is also necessary on the methods of resuscitation employed. The authors state that ephedrine ¼ gr. (50 mg.) was repeated (it was given first in similar dosage just before the spinal injection), followed by 8 minims (0.5 ml.) of adrenaline hydrochloride 1 in 1,000, an intracardiac injection of nikethamide 1 ml., and anal stimulation also. Despite these measures and artificial respiration, they obtained no response.

Surely, Sir, a total spinal demands a different technique of resuscitation. This should commence with, and throughout the whole proceeding should be accompanied by, efficient artificial respiration, performed either by intermittent pressure on the reservoir bag of an anaesthetic machine delivering pure oxygen, or by inflation of the patient's chest by the anaesthetist himself blowing into a mask held tightly on the patient's face. Direct-vision intubation of the larynx may or may not be required. Once the anoxia resulting from apnoea is controlled, attention should be directed to raising the blood pressure. This can be done by the intravenous injection of 10 mg. of "methedrine" or ¼ gr. of ephedrine, followed by an intravenous infusion of 5% dextrose solution, normal saline, plasma, or whole blood. Elevation of the legs will return to the circulation a volume of venous blood which will help to fill the dilated and expanded vascular bed. Lastly, a slight Trendelenburg position will help to keep the brain supplied with blood without increasing the level of analgesia (which presumably has already ascended to the cervical region).

The large series of successful cases of caesarean section performed under spinal analgesia with hyperbaric nupercaine by Rufus Thomas,[1] Resnick,[2] and others, fortified by one's own experience, proves that the method—if performed carefully, correctly, and in accordance with the proper principles of spinal analgesia, and accompanied by the administration of pure oxygen throughout the operation—is a safe anaesthetic for the mother and one giving ideal operating conditions for the surgeon. Its relatively harmless effect on the child is emphasized by the fact that in the cases under review the authors obtained live babies after the mothers were dead, in one case for as long as four minutes.

Let us appreciate the risks involved in this method of analgesia, but equally let us recognize its contraindications and be prepared to treat in a proper manner its complications, which need very seldom arise if well-tried drugs are employed and if technique is carefully studied and meticulously applied.

Spinal analgesia should have no place in the practice of the surgeon who claims that he is obliged by circumstances to manage on his own. Like all other methods of pain relief it demands minute-by-minute observation of the patient by an experienced and competent anaesthetist. It is not a handy method by which a surgeon can give his own anaesthetic and then proceed to perform a skilful and perhaps difficult operation which obviously demands his whole attention. Only when these facts are fully appreciated will the slaughter of "a considerable number of young healthy pregnant women who stand condemned to death by spinal anaesthesia for caesarean section"[3] be avoided.—I am, etc.,

Westcliff-on-Sea. J. ALFRED LEE.

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2 *British Medical Journal*, 1945, **2**, 722.
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The G.P. and the Maternity Service

SIR,—I should like to reply to some of the comments upon my article "The General Practitioner and the Maternity Service" (March 11, p. 598). I am sorry that Dr. H. G. Harvey (April 15, p. 903) feels that I am perpetuating the conflict, because my article was intended to suggest some sort of compromise that might be accepted by both sides. The original address to the general practitioners of the East Herts Division was not prepared with the intention of publication. After the address I invited suggestions and criticism. These were on the whole constructive, most of the practitioners showing an insight into the problem which appears to be lacking in your correspondence columns. At the end of the discussion it was the general practitioners themselves who suggested that the address should be published in the *Journal*. I cannot therefore agree with Dr. Harvey that it was an unjust attack.

Dr. G. C. Mathers (April 8, p. 843) is alarmed by "criticism of those performing the service now," but I would reassure him that my remarks were directed against a few individuals, an obsolete system, and some of the difficulties created by the Health Service. I can also assure Dr. W. Young (April 1, p. 785) that very few practising obstetricians have access to the official ear. I only wish that we had.

The "fantastic stories," drawn from my own experience during 15 years of obstetrics in general practice before specializing, were intended only as a reminder that such situations should no longer exist in general practice. These stories have startled Dr. J. E. Kennedy (April 1, p. 785). But it seems that they remind him only of Dr. Cronin, and he calls for a champion—presumably to perpetuate the conflict.—I am, etc.,

Hitchin, Herts. D. W. JAMES.

Poliomyelitis after Immunization

SIR,—In the report of the discussion at the Royal Society of Medicine on poliomyelitis following inoculations (April 29, p. 1004), I am erroneously reported to have said that "the Americans had not got a combined antigen."

What I did say in effect was that "as one of the combined diphtheria and pertussis antigens used during the Melbourne outbreak of poliomyelitis was a British preparation containing alum, and as the use of a similar combined antigen, or A.P.T. alone, seemed in this country to be associated with post-inoculation poliomyelitis, it may be that the British diphtheria and pertussis prophylactics are more likely to produce an irritant lesion at the site of inoculation than is the case with American prophylactics in which alum is not used so much."—I am, etc.,

London, W.2. ROBERT CRUICKSHANK.

Ankle Amputation

SIR,—I read with great interest Mr. W. Gissane's letter (April 15, p. 901) and agree that the Syme's amputation is an excellent operation, and there can be no doubt that a great number of such stumps stand up to limb-wearing for many years. There is no doubt, too, that some of them break down, but this criticism can be levelled at any amputation, especially the below-knee amputation.

Syme's amputation has fallen into disrepute for two reasons: (1) faulty surgery and (2) the difficulty of supplying a suitable prosthesis. In my view, a Syme's amputation is one of the most difficult amputations to perform and requires considerable experience. It is essential when enucleating the os calcis to preserve the blood supply of the heel flap. Furthermore, the plateau of the tibia should be cut horizontally. This is important. The post-operative treatment demands vigilance, because the heel flap is inclined to slide off the tibial plateau and become eccentric. This tendency should immediately be counteracted by appropriate strapping with elastic adhesive plaster.

The advantages of a Syme's amputation are: (1) the patient is left with a stump which enables him to get out of bed without a prosthesis; (2) he walks well with a prosthesis; and (3) psychologically the patient feels he still has his limb.

With a soundly healed and orthodox Syme's amputation a good limb-maker can fit a valuable prosthesis. Of necessity the end of the apparatus is bulky, and therefore women are reluctant to accept such an apparatus and prefer a below-knee stump, where the apparatus is more aesthetic. I cannot agree that the elephant boot which Mr. Gissane mentions is aesthetic. The average good limb-maker can produce a better-looking limb than an elephant boot.—I am, etc.,

Worcester Park, Surrey. LEON GILLIS.

Cervical Disk Lesions

SIR,—Dr. W. M. Philip's article (April 29, p. 986) on brachial neuralgia is to be welcomed. It draws renewed attention to a common syndrome whose cause and prevention have only recently been understood. However, I am disappointed to find no mention of prophylaxis. When an attack of internal derangement occurs at a lower cervical intervertebral joint an acute stiff neck results. If the displacement takes place more gradually the first symptom is nearly always scapular pain. Clearly it is at this stage, when the displacement is slight and recent, that manipulative reduction is most quickly and easily performed.[1] One or two attempts without anaesthesia nearly always suffice. By contrast, when severe root pain in the upper limb has supervened manipulation is more difficult and occasionally fails.

It is thus vital that these early cases should no longer receive traditional labels such as "fibrositis" or "rheumatic torticollis" and be ordered palliative treatment. Though it is true that many patients do recover spontaneously with or without physiotherapy, injections, etc., recovery is often, as Dr. Philip points out, partial and may take weeks or months. Moreover, a certain proportion get worse and develop brachial pain. This event is wholly avoidable; indeed, cases of root pain from cervical disk lesions would all but cease if manipulative reduction were carried out as a matter of course in all cases on the first occasion that the patient was seen. This has in fact been the routine practice in the department of physical medicine at St. Thomas's Hospital for the past five years.—I am, etc.,

London, W.1. JAMES CYRIAX.

REFERENCE

[1] Cyriax, J., *British Medical Journal*, 1948, **2**, 251.

Hypercalcaemia during Vitamin D Treatment

SIR,—Drs. H. St.C. C. Addis and R. D. Currie stress the toxicity of excessive doses of vitamin D (April 15, p. 877). However, in the two case histories reported, it would seem that the toxic symptoms were not due to the vitamin. As Case 1 is "typical of Paget's disease," and Case 2 one of "advanced rheumatoid arthritis," loss of appetite, fatigue, and pallor may well be due to the disease, as stated by the authors in the discussion, albeit conversely, and not to the high doses of calciferol.

The serum calcium is high in both cases, but in Case 1 the authors declare that it may be due to the Paget's disease. Moreover cases of Paget's disease have been successfully treated with massive doses of calciferol. In Case 2 the serum calcium does not appear to be of any consequence. In fact, a level of 12.8 mg. per 100 ml. is not a sign of calciferol intoxication but is the normal effect of the prolonged administration of massive doses and is not usually an indication for abandoning treatment.

With regard to renal impairment, Case 1 presents a definite previous history of Bright's disease, but in spite of this the urea clearance was 21% of the average normal, even though the patient had been taking calciferol in a dose of 200,000 i.u. daily for at least a year. Renal dysfunction is an absolute contraindication to massive doses of vitamin D, and in this case the excessive administration has oddly enough failed to produce those untoward results which might have been anticipated. In Case 2 the blood urea reached 94 mg. per 100 ml., and because the patient "gave no relevant history of any previous illness," and as "he had been taking calciferol in a dosage of 600,000 i.u. twice a week for about a year, he was considered to be suffering from the effects of calciferol intoxication." Patients become uraemic without taking calciferol. As the authors state, "No conclusion concerning the presence of previous renal impairment was arrived at."

The authors conclude the history of Case 2 without even suggesting a cause for the patient's death. Written as it is, and on quick reading, one could be given the wrong impression that death was due to the vitamin. In conclusion, it seems that the amount given to these two patients should not be called "excessive," since the toxic symptoms cannot be definitely ascribed to the calciferol.—I am, etc.,

London, W.1. A. E. GREMEAUX,
Medical Director of Roussel Laboratories Ltd.

Carcinoma of Stomach

SIR,—I am bound to agree with Mr. Harold C. Edwards (April 29, p. 973) that the radiological report he quotes (p. 976) is a bad one and the advice given is bad, and I can only conclude that it was made, as he says, by an inexperienced radiologist. But to infer from this that the radiologist should never give advice to the clinician appears to me to be most unsound. It is the duty of the good radiologist to know the significance of what he sees on the screen and in his films and to pass this information on to the clinician. To make a bare factual report is only to have half done his job. The whole art of radiodiagnosis lies in the interpretation of the facts.—I am, etc.,

Ryde, I.W. J. CONWAY-HUGHES.

"Disprin" Tablets

SIR,—Dr. M. Coplans (April 22, p. 958) is mistaken in stating that reference is made to his name in the brochure included with each carton of "disprin" tablets. It is only in our booklet concerning disprin which is issued to the medical profession that any

reference to his name appears, and here his name, together with his co-authors, is properly included, in view of their contribution in this field, in a list of seven references to relevant published work.

May we also take this opportunity of referring to the other point in his letter, regarding acidity and the description neutral? We readily agree that, as stated by Dr. Coplans, the *p*H of the draught (disprin dissolved in water) is in the region of 4.5. The exact figure depends, of course, on such factors as concentration and temperature. The *p*H under corresponding conditions of calcium aspirin itself can be shown by electrometric titration to be 4.7, and this represents neutral calcium aspirin as defined by Dr. Coplans in his published work.[1]

As declared on the label of each pack, each disprin tablet contains the following ingredients, each of which participates in a prompt solubilizing action when the tablet is placed in water:

Acetylsalicylic acid	5 gr.
Calcium carbonate	1½ gr.
Citric acid	½ gr.

This formula shows that, stoicheiometrically, there is a slight excess of citric acid—approximately one-sixth of a grain—and this has been provided for in the formula mainly in the interests of palatability. This excess accounts for the slightly lower *p*H of the draught than the theoretical figure of *p*H 4.7 mentioned above. The metabolism of citric acid is, of course, quite different from that of acetylsalicylic acid. Our concern was not with the small amount of citric acid, which is in any case rapidly metabolized away, but with the acetylsalicylic acid, which, in disprin, has been substantially neutralized. It is also appreciated that this slight lowering of the *p*H necessarily means a corresponding displacement of the final equilibrium between the acetylsalicylic acid and the calcium base—i.e., a small amount of acetylsalicylic acid in solution is released, which small amount would otherwise have reacted with the calcium base.

In our medical literature, therefore, we have been at pains to use the phrase "substantially neutral." While Dr. Coplans quotes an advertisement dated January 7, he will doubtless have seen later advertisements which incorporate this qualification in the text.—I am, etc.,

E. H. HALL,
Technical Director,
Reckitt and Colman, Ltd.

Hull.

REFERENCE

[1] Coplans, M., and Green, A. G., *Chem. Ind.*, 1935, **54**, 805.

A New Method of Bronchography

SIR,—In view of the recent controversy concerning the safety of bronchography by cricothyroid puncture and its condemnation by so eminent an authority as Mr. R. C. Brock (March 12, 1949, p. 454), we have devised an alternative technique. The apparatus consists of an ordinary nasal Magill-type endotracheal catheter which carries an eccentric inner tube for the introduction of radio-opaque oil. We found a No. 6 Magill tube (28 French gauge) satisfactory for most adults. The inner tube was of 4 mm. outer and 2 mm. inner diameter. This was made for us by Messrs. A. Charles King.

In outline, the technique consists of transnasal endotracheal intubation under topical analgesia and introduction of the oil through the inner tube. Premedication by intramuscular "omnopon" gr. ¼ (22 mg.) and scopolamine gr. 1/150 (0.4 mg.) is advisable one hour before the procedure. The dry mucous membrane is more readily susceptible to topical analgesia and the cough reflex is inhibited to some degree. In older patients and those with marked dyspnoea and cyanosis, atropine gr. 1/75 (0.9 mg.) may be substituted.

Topical analgesia is induced by spraying the nostrils, nasopharynx, and back of the tongue with a solution of 2% aqueous amethocaine hydrochloride containing 6 minims (0.36 ml.) liquor adrenaline hydrochloride per drachm (3.5 ml.). After an interval of five minutes the tongue is drawn forwards, held in a swab, and the pyriform fossae and upper surface of the larynx painted with the same solution. This is accomplished by means of a swab held in a long, suitably curved forceps: we employ Krause's pattern. The tube is covered on its distal third by a layer of 10% nupercaine ointment and lubricated with liquid paraffin. The patient is now laid supine on the table, his head slightly flexed by a small pillow, and the tube gently introduced into a nostril. The tube is passed slowly backwards along the floor of the nose and usually enters the trachea at the first or second attempt. We have had no failure in a series of 20 cases. Tracheal intubation is succeeded by a short period of coughing, which soon ceases. The patient can then be placed in position and the radio-opaque oil introduced through the smaller tube as required.

Advantages of this method we have found are: (1) infrequency of coughing during and after introduction of the oil; (2) there is at no time obstruction of the airway, thus eliminating the feeling of apprehension engendered by other translaryngeal techniques; and (3) no patient has raised objection to the procedure being repeated—in fact we have found it easier to enlist the co-operation of the patient for a second bronchogram when necessary. The only disadvantage is that a certain degree of dexterity and practice may be required for the procedure of intubation.

We are indebted to Dr. F. T. Rees, *M.C.*, T.D., Director-General of Medical Services, Ministry of Pensions, for permission to publish this article.

—We are, etc.,

D. E. VAUGHAN JONES.
M. R. WILLIAM SPACEK.

London, S.W.13.

An Appendicular Faecolith

SIR,—Every radiologist is frequently asked to investigate the appendix, and there must be few, if any, radiologists who are not aware of the occasional existence of appendicular concretions and of the possibility of demonstrating them radiographically. Thus I was especially interested in the letter by Mr. Eric Coldrey (March 18, p. 673), in which he states that "as no reference could be found in the literature of an appendicular faecolith showing up on a radiograph and as I have not been able to find anyone who has seen one before . . ." I myself during the last 15 years of a busy *x*-ray diagnostic practice have seen five cases of these concretions, the last one being only two months ago.

As regards references in the literature to the radiographic demonstration of appendicular concretions, these are surely quite frequent. As far back as 1907 Goldmann[1] and Weisflog[2] showed that concretions in the appendix were often opaque and that they were liable to be confused radiologically with ureteral calculi. Since then many workers have written testifying to the occasional existence of these concretions and to the possibility of their being demonstrated radiographically.

To mention only a few references, there are (1) *Textbook of X-ray Diagnosis*, by Shanks, S. C., Kerley, P., and Twining, E. W. (1939, London); (2) Sante's *Principles of Roentgenological Interpretation* (1947, Ann Arbor); (3) Kerley's *Recent Advances in Radiology* (1936, London); (4) Rose and Carless's *Manual of Surgery* (1943, London); (5) Boyd's *Surgical Pathology* (1947, Philadelphia); (6) Kohler's *Roentgenology* (1935, London); and (7) Golden's *Diagnostic Roentgenology* (1947, New York).

Mr. Coldrey says that his faecolith showed on the radiograph as a "clear-cut, bullet-shaped shadow lying just above the centre of the iliac crest on the right side" and that this was diagnosed as a calcified mesenteric gland. My experience is that calcified glands anywhere in the body are usually amorphous rather than clear-cut; also that calcified mesenteric glands usually lie nearer to the mid-line of the body than to the centre of the iliac crest.

The whole question of the radiological examination of the appendix is a vexed one. There are two schools of thought, one maintaining that the only help that radiology can give is to disclose the position of the appendix—I once saw demonstrated a case of a bad hiatus hernia of the stomach and caecum into the thorax with the appendix lying in the left apex of the lung, so that the appendicectomy had to be performed by a thoracic surgeon—while the other school, a smaller one, maintains that radiology is the most exact method of determining the state of health of the organ. Obviously the truth lies somewhere between these two opinions. The ideal would be for the

physician and the surgeon and the radiologist to work together as a team in every suspected or doubtful case, for only by such team-work is it possible to do the best for the patient.—I am, etc.,

London, W.1. ISAAC EBAN.

REFERENCES

1 *Arch. Roentgen Rays*, 1907, **12**, 335.
2 *Therap. Mschr.*, 1937, **21**, 60.

Gastric Ligation for Peptic Ulcer

SIR,—Could I have the favour of your columns to make a few remarks on the operation of ligation of the stomach arteries as first suggested, as far as I know, by Mr. Wilson H. Hey?

Case 1.—A man aged 40. Admitted June 12, 1948, with profuse haematemesis and melaena. He was treated on medical lines till June 22, with progressive deterioration in his condition, and as he seemed almost moribund an operation under local anaesthesia was undertaken. The stomach and intestines were found full of altered blood. No definite ulcer could be felt in the stomach or duodenum, but a number of discrete haemorrhagic spots could be seen in the antral portion of the stomach. In the hope of doing something useful, and recollecting Mr. Wilson Hey's description of an operation which I had heard him describe some ten years previously, the pyloric artery, coronary artery, the gastro-duodenal, and the gastro-epiploic were ligated with linen thread. To my surprise the bleeding stopped from that moment, and the patient made a most excellent recovery. A test meal carried out on May 6, 1949, showed a maximum free acidity of 0.082%. On December 30, 1949, he stated that his health was good, he had gained weight and was free from indigestion, from which he had suffered for many years previously.

Case 2.—A man aged 74 (personal friend of my own). He had had dyspepsia for many years and recently persistent vomiting. *X*-ray examination showed the presence of some distortion of the duodenum and delay in the emptying time of the stomach. His maximum acidity was 0.327%. As he wished either to "be mended or ended" laparotomy was performed on January 24, 1949. A penetrating ulcer of the second part of the duodenum was found, causing some stenosis. The gastric artery and gastro-duodenal artery were ligated with linen thread as before, and, in view of the obstruction, a small gastro-enterostomy as near as possible to the pylorus was done. He is to-day in excellent health, quite free from indigestion, enjoying life better than he did for the last thirty years.

Case 3.—A man aged 28, with a long history of dyspepsia and history of a suspected perforation during Army service in 1941. The Army record stated that he suffered from hyperchlorhydria, but the test-meal chart was not available. He was admitted as a perforated duodenal ulcer on April 14, 1949. The ulcer was closed in the usual way and the arteries ligated as in the previous case. On August 31, 1949, his test meal showed a maximum free acidity of 0.255%. On December 30, 1949, he stated that his health was good, he was free from any indigestion, and had gained 12 lb. (5.4 kg.) in weight.

Case 4.—A man, aged 33, was admitted with a diagnosis of perforated duodenal ulcer on May 20, 1949, and treated as in the previous case. Test meal on September 2, 1949, showed a maximum acidity of 0.182%. On December 30, 1949, he stated that his health was satisfactory; he had gained 10 lb. (4.5 kg.) in weight, and suffered from occasional "slight heartburn."

Case 5.—A man aged 61. This was the only case in the series treated as a partially controlled case. He had many years' history of dyspepsia, and the presence of a duodenal ulcer was confirmed in 1937. *X*-ray examination showed deformity of the duodenal cap and considerable delay in the emptying of the stomach contents. Test meal on May 9, 1949, showed a maximum acidity of 0.292%. Operation on June 1, 1949, confirmed the presence of a duodenal ulcer in the first part. Arteries were ligated as before. He has gained 10 lb. in weight, can eat fish and chips without discomfort, but cannot eat as much at a time. *X*-ray examination on February 22, 1950, showed slight delay in the stomach emptying. Test meal: maximum acidity 0.230%.

Case 6.—A Dutchman, aged 45, who gave a history of having a gastro-enterostomy done in Holland in 1946. He still suffered from severe dyspepsia. *X*-ray examination showed deformity of the duodenal cap and some delay in the emptying of the stomach. A laparotomy was performed, and it was found that what his operation had really been was a cholecystectomy: the deformity was probably due to adhesions, which were extensive. No definite ulcer was palpated, but his stomach was of the hypertonic type. He was treated as previous cases, and he says he has gained weight, his health is better than it was, but he still suffers from some indigestion.

Case 7.—A man, aged 56, was admitted with perforated duodenal ulcer (first part) on January 6, 1949. Treated as Case 3. On March 30, 1950, had neither gained nor lost weight. He still has some indigestion and says his health is fair. However, he has been under treatment for glaucoma during this time.

Case 8.—A man, aged 35, was admitted with perforated duodenal ulcer on June 23, 1949. No test meal or *x*-ray examination has been done. Operation as before. On December 27, 1949, he was symptom-free and had gained 20 lb. in weight.

Case 9.—A man, aged 28, was admitted with perforated duodenal ulcer. Operation was performed on December 21, 1949—as before. On March 30, 1950, he states that he has gained weight, still has some indigestion, but his general health is fair.

Case 10.—A man aged 57. He had many years' history of dyspepsia. Operation as above for perforated duodenal ulcer on April 21, 1949. On March 30, 1950, he had gained 28 lb. (12.7 kg.); he stated that his health was good, but he still had some dyspepsia.

In each case the arteries were ligated tightly with linen threads along with the nerves accompanying them. In thinnish subjects these nerves can easily be seen running between the layers of omentum. I have read somewhere a note by an American author that a tight ligature is a more effective method of interrupting nerve impulses than section (and I would be glad to have confirmation of this). When the pyloric artery is ligated the pyloric muscle relaxes instantaneously. Immediately after ligation of the left gastric artery some waves of strong peristalsis pass along the stomach from the cardia towards the pylorus—this only lasts for a few moments. I had thought these observations were original, but find that, as usual, they have been observed in the U.S.A. many years ago. At the moment of ligation of the gastro-duodenal artery the pallor produced on the anterior wall of the stomach is striking and somewhat terrifying.

My reason for reporting these cases in this fragmentary and somewhat unscientific form is that I am no longer to have the opportunity of undertaking major surgery or further observing these cases.—I am, etc.,

Nelson, Lancs. OWEN WILSON.

New Concepts of Gout

SIR,—The dissertation on gout delivered by Professor F. Wood Jones to the Heberden Society and published in the *Journal* of March 11 (p. 561) raises several extremely interesting points. His reference to, and anatomical demonstration of, arteriovenous shunt in the region of the affected joint is of more than academic interest. So is his reminder that the shunt is probably under the direct control of the sympathetic nervous system—i.e., it constitutes a diversion of the blood supply in response to an axon-reflex stimulus.

We are thereby reminded that arteriovenous shunting of blood is by no means a new concept. Lewis and others demonstrated such a shunt to be operative in urticaria, and Trueta and his colleagues made it patently clear that the same phenomenon occurs in lower nephron nephrosis. Wood Jones's contribution to the subject as it applies to gout, and based on injection of the arterial supply to the amputated foot, is therefore decidedly intriguing. His utilization of a viscous injectable material precludes the possibility of the fluid having traversed the capillary bed, and its emergence in large veins is in keeping with Trueta's observation that in lower nephron nephrosis blood reaching the exit renal vein is largely of arterial quality. The obvious conclusion that derives from these research findings is that the blood is shunted as the result of capillary spasm induced by some such substance as histamine.

If this is so, then it becomes logical to attribute the local or focal effects in these three conditions to an antigen-antibody reaction with consequent release of histamine. Such a hypothesis suggests that in migraine, Horton's encephalalgia, rheumatoid arthritis, and other presumed allergic states a similar arteriovenous shunt may be operative. And, finally, if such a hypothesis be justified as scientifically acceptable, we are at once presented with the explanation of why "cortisone," A.C.T.H., or adrenal cortical hormones in bulk should have such dramatic curative effects (particularly when combined with vitamin C) in the above-mentioned conditions. The *modus operandi* of this therapy is very ably recorded as a "chain reaction" by Ungar in his researches into the systemic hormonal response to injury.—I am, etc.,

Durban. J. DRUMMOND.

Potency of Vaccine Lymph

SIR,—Recent deaths from smallpox prompt me to record an occasion when vaccination with British lymph did not protect everyone against the Eastern type of smallpox.

A British division landed in India in June, 1942, and some of the troops were encamped in and around Poona. Smallpox became prevalent in the local population in December, and in a brief period there were ten cases with three deaths in units of the division. Revaccination of all ranks was ordered and the outbreak was halted.

In the divisional headquarters signal battalion, the head cook, who had also been vaccinated in England, was admitted to hospital with fever on the evening of Christmas Day. Next morning it was announced that he had smallpox—the first case—and the 300 men of his unit were revaccinated with Indian-prepared lymph. Out of the 300, all of whom had been vaccinated in England, 29 developed vesicles comparable to those obtained on primary vaccination, showing that these particular men had no immunity and that, had they not been revaccinated, it is a fair presumption that some at least would have contracted smallpox sooner or later.

The officer commanding the signal unit during the afternoon of Christmas Day sat on the cook's bed—there were few chairs in temporary Indian barrack huts—congratulating him on the excellent fare which he had prepared for the men's Christmas dinner and commiserating with him on his not being able himself to enjoy it. This officer was revaccinated also next morning by my D.A.D.M.S., who was also medical officer of divisional headquarters, and he took like a baby. He had been twice previously vaccinated by the same medical officer, once before embarkation and again on board ship, and on each occasion with a negative result, which seemed to show that his immunity was satisfactory. Had he not been revaccinated promptly with Indian lymph there is little doubt that he would have contracted smallpox from the cook, who became a confluent case and was desperately ill.

As a result of the experiences round Poona, Army headquarters issued an instruction that all British personnel landing in India from the United Kingdom would be revaccinated on arrival. The Army practice was to make two strokes each ¼ in. (1.8 cm.) long, and this alone, quite apart from the difference in potency of the British and Indian lymphs, made a "take" more probable than with the single ½-in. (1.25-cm.) British method. As far as I know no British soldier, after vaccination with Indian lymph, contracted smallpox. There were certainly no more cases in the British division.—I am, etc.,

B.A.O.R. 15 W. STRELLEY MARTIN.

Hodgkin's Disease and Pregnancy

SIR,—The decision to terminate a pregnancy occurring during the course of a serious illness is always of a grave nature. Although no one would doubt the wisdom of the advice given by Lieutenant-Colonel J. Clynton Reed and Captain J. E. Drabble (April 22, p. 962) to their patient suffering from Hodgkin's disease, diagnosed four months after a normal childbirth, there is room for careful consideration of the pros and cons for such a step. The authors, who have traced in the literature 10 cases of pregnancies occurring in patients affected by Hodgkin's disease, relate that "the course of the disease was almost invariably accelerated by the pregnancy, the patient often deteriorating rapidly and dying in the puerperium or soon afterwards." It is perhaps worth while putting on record the following case.

A married woman aged 29 was seen by me in the first instance on April 17, 1947. In July, 1943, when abroad, she had received deep *x*-ray treatment to supraclavicular, axillary, and mediastinal lymph nodes after a diagnosis of Hodgkin's disease (red blood corpuscles 2,900,000) was made. She became pregnant in 1946, and in August of that year, when the pregnancy was in the eighth month, the red-cell count was 3.4 millions and E.S.R. 63 mm. fall per hour. Radioscopically there were enlarged mediastinal glands.

In September, 1946, the patient came to England and in October was delivered of a normal full-term child. She had a post-partum haemorrhage, and a blood transfusion brought her blood count up to: Hb 89%; R.B.C. 4.1 millions, W.B.C. 7,200.

Between May 28, 1947, and December 21, 1948, six courses of deep *x*-ray treatments have been given, including a trunk bath to abdominal and mediastinal masses and lymphoadenomatous erosion of the lumbar vertebrae. With ups and downs the patient on the whole has been fairly well during the past sixteen months without any further radiotherapy, and only one blood transfusion was given, in May, 1949. On March 6, 1950, her blood count was: Hb 78%; R.B.C. 3.9 millions; colour index 1.0; W.B.C. 17,500. The E.S.R. has varied from 70 mm. on March 15, 1949, to 23 mm. on December 21, 1949. She is at present fairly well and capable of carrying on her domestic work. Her child, now 3½ years old, is a healthy, normal-looking boy. He has kept his mother busy, earth-bound, and probably very happy.

It is submitted that in a disease which is incurable and in which the survival period from the time of diagnosis is on the average three years, medical considerations regarding the progress of the disease should weigh, up to a certain degree, against the continuation of a pregnancy. There are, however, other circumstances, such as the wishes of the husband and wife, which should be taken into consideration.—I am, etc.,

Northampton. B. JOLLES.

Early Rising for Puerperal Women

SIR,—I feel that some of Dr. A. B. Swarbreck's conclusions (April 22, p. 936) cannot go unchallenged. He dismisses the different incidence of post-natal lacerations and sequelae between his two groups as due to chance selection of cases. Surely such a large disparity would not be expected as a result of this? Is it not more likely that in the more conservatively treated group the same incidence of lacerations occurred, but that many of them healed spontaneously as a result of that very treatment?

Continued use of sprained muscles leads to a worsening of the condition, and we treat it by rest. I cannot help feeling that, similarly, a period of rest is essential in the puerperium while the abdominal musculature readapts itself to its usual role. For it undergoes a sudden relaxation from the stretched position, one which has arisen only gradually during the antenatal period. It is my impression, also, that in cases of prolapse occurring in later life there is very often a history of inadequate puerperal rest.—I am, etc.,

Twickenham. DAVID WHEATLEY.

Stress Incontinence

SIR,—In the use of posterior colporrhaphy as a preliminary "episiotomy" procedure prior to anterior colporrhaphy (see my letter in the *Journal* of February 25, p. 490), some difficulties may arise. These can be avoided by attention to certain details of the surgical anatomy involved which have not been accentuated and probably have some bearing on the aetiology and cure of rectocele.

After the usual transverse perineal incision, a Willett's forceps is applied to the perineal margin of the vagina and an intravaginal finger used to evert the posterior wall; "gauzed-digit" dissection up the posterior surface in the middle line soon exposes, in the majority of cases, a thin, longitudinally streaked lamella covering the vaginal wall. This useful landmark is the recto-perineal muscle, consisting of the vagino-perineal insertion of the anterior fibres of the external longitudinal muscular coat of the rectum, and is comparable with the recto-urethralis muscle in the male. When this lamella is carefully dissected aside, the smooth glistening surface of the true vaginal fascia is exposed and can easily be followed upwards in front of the rectum without any bleeding.

On the two sides of this central dissection two ridges of perineal tissue are formed which enclose the perineal extensions of the two lateral recto-vaginal fascial bands. These two sagittal bands are condensations of the endopelvic fascia as it extends downwards into the perineum over the inner borders of the levatores ani, and are tangentially inserted into the lateral surfaces of the rectum and vagina; they enclose a rich vascular network derived from the middle haemorrhoidal vessels and form an important blood supply of the vaginal wall (useful for post-operative healing). With careful surgical conservation these bands have considerable solidity, and when the levatores ani are ligated together beneath them they are strong enough to suspend the vaginal wall, and possibly the rectum, except when they are in a state of senile atrophy.

Emmet's lateral vaginal sulci running up the posterior vaginal mucosa, made much of in days gone by, are shallow folds produced by, and on the inner surface of, the vaginal insertions of the two lateral recto-vaginal fascial bands. T. A. Emmet,[1] in 1883, used these sulci as superficial landmarks in posterior colpoperineorrhapy but did not describe their anatomical significance in depth, though he rightly considered them the lateral limits of rectocele. Modern methods of posterior colporrhaphy, mostly modifications of Lawson Tait's technique, have superseded Emmet's method, and his sulci have suffered an undeserved neglect.

The distance between the two lateral sulci varies proportionately to the size of the rectocele, and the sulci are often flattened out

over the larger rectoceles; but it is not usually necessary to excise the distended posterior vaginal wall beyond the calculated position of the sulci. I find that the clamps, applied outside the lateral limits of the wedge to be excised from the posterior vaginal wall, usually occupy this calculated position and that the vaginal insertion of each lateral recto-vaginal band is immediately lateral to the clamps. Thus, when the V-shaped gap produced in the posterior vaginal wall is closed by mid-line suturing, this suturing also brings the lateral recto-vaginal bands together in the mid-line. These bands are attached on their outer surface to the inner surfaces of the levatores ani by fairly loose and avascular tissue which can be opened up with the finger in order to define the lateral surfaces of the bands and expose clean levatores ani surfaces for purposes of suturing. The deep ends of the bands extend into the endopelvic fascia above the levatores ani, and will retain their surgically acquired mid-line position even though the underlying levators may, alas, gape apart at a later date. They will then, moreover, fulfil the permanent role surgically intended for the levators.

Both the fascial bands and the levators can be defined with less difficulty before the posterior vaginal wall is divided upwards. This should be borne in mind in those cases where it is found necessary to extend the "episiotomy" procedure up the posterior vaginal wall. Conservation of the lateral fascial bands avoids the chief source of blood loss in colporrhaphy (its "episiotomy" role included) and leaves a good blood supply to the vaginal wall for healing purposes.

These modifications of the modern posterior colporrhaphy technique are based on the above-described conceptions of the local surgical anatomy, and I have used them for many years. In my opinion they make posterior colporrhaphy easy, quick, less haemorrhagic, and more effective, both for its primary object and for its episiotomy role.—I am, etc.,

London, W.1. E. HESKETH ROBERTS.

REFERENCE

1 *Trans. Amer. Gynaec. Soc.*, 1883, **8**, 200 and 207.

Tuberculosis and Industrial Injury Benefit

SIR,—I have just read the report of a recent decision of a tribunal concerning the claim of an assistant tuberculosis officer for compensation under the National Insurance (Industrial Injuries) Act, 1946. The claim was disallowed owing to the fact that the claimant was unable to prove the exact time and date of his infection by the tubercle bacillus. It would appear, therefore, that as the law now stands tuberculosis workers are not, in fact, covered by the Act, although I had been given to understand that the onset of tuberculosis during the course of employment as a tuberculosis worker had been recognized for compensation under the Act. I feel that this decision can only serve to enhance the difficulties of obtaining staff for sanatoria and that the matter should be taken up at the highest level without delay.—I am, etc.,

Maidstone, Kent. F. TEMPLE CLIVE, Physician Superintendent, Preston Hall Hospital.

*** The case to which Dr. F. Temple Clive refers is reported at some length in the Medico-Legal Notes elsewhere in this issue (p. 1145).—ED., *B.M.J.*

Kidnapped Greek Children

SIR,—I fear that Dr. Judith Waterlow (April 22, p. 963) is herself "distorting and exploiting the facts." She states that only one parent complained of these abductions. Here are statements of facts taken from various observation groups of the United Nations special committee, and are fully documented:

"End of March, 1948, at Ieropiyi, witness saw 250 children collected from villages in vicinity. Mothers and children weeping. Parents parted from children by compulsion. Returned later weeping."

"March 15–April 15, 1948, witness saw 3,000 children pass through Vatokhorion towards Albania in many groups; saw women returning."

"April, 1948, witness said guerrillas came to Dhipotania to collect children. Two families consented; 22 were forcibly abducted despite their parents' protests. They crossed the border into Albania near Komninadhes."

"March 20, 1948, witness at Organi saw 40–50 children taken from parents and taken towards Smidhadi. Parents unhappy but dared not complain."

"August 3, 1948, witness and 9-year-old daughter escaped from guerrillas in region of Sarpidhonia to prevent daughter's removal to Bulgaria."

The fact that more parents would not complain was due to the fear of Communist reprisals. The children in the frontier district were hidden in cellars or in the hills, for fear of abductions, and not for fear of bombing by the Greek Government. If the eastern countries are concerned solely with the welfare of these children, how is it that the Yugoslavs and Czechoslovakians are disputing about several hundreds of these kidnapped children? It would appear to the disinterested onlooker that these children have been kidnapped from their homes solely to be inculcated with the Communist doctrine, in a similar manner to the kidnapping by the Ottomans of Christian children in the thirteenth and fourteenth centuries for the purpose of training them to be Ottoman soldiers.—I am, etc.,

Enfield, Middlesex. D. S. PIPER.

Morphine in Asthma

SIR,—Reports of failures should always be encouraged, and we owe gratitude to "T.G." for frankly telling us his sad experience with an asthmatic suffering from influenza and bronchitis who died after injection of morphine.

I believe that the rule never to give an injection of morphine to a case of bronchial asthma should find general acceptance and enter the textbooks. I was fortunately taught this rule about 1922 as a house-physician at the first medical clinic in Vienna on the occasion of somebody else's mistake. While never having had to act against it myself, I have repeatedly heard of fatalities due to its contravention. Morphine abolishes the cough reflex and depresses respiration so that the unfortunate patients "drown in their own secretions." Pethidine appears to be free from this danger, especially when given with massive doses of penicillin.—I am, etc.,

London, W.1. F. E. LOEWY.

POINTS FROM LETTERS

Acute Inversion of the Uterus

Dr. I. GORDON CAMERON (Nairobi) writes: The letter by Drs. D. Crook, F. Kohn, and T. D. Lambert on acute inversion of the uterus (March 25, p. 729) prompts me to record a similar case with a happier result which I encountered in a town in the North in 1923, many years before the advent of the sulphonamides and penicillin. One of the old "howdies" called me (a young and raw assistant) to a maternity case delivered by her a few hours previously because the woman had passed a large "clot" and, try as she could, she could not get the "clot" away. On arriving at the house (in the slums of Darlington), I found the woman lying in a dirty bed, between her thighs a large, flaccid, fleshy bag, on the surface of which one saw what was almost certainly the area where the placenta had been attached, the remainder of the area being flat and shiny. The woman was quite conscious but had a rapid pulse of poor quality. The bed, I remember, was verminous, and I watched a flea jump on to the completely inverted uterus (for that was what the mass was) and off again. I arranged for her transfer to hospital and rang up the local surgeon to ask for his advice. He—like myself—had never seen an acute inversion, but he had read that the treatment was to apply a Bier's bandage to the inverted uterus, starting the bandage at the fundus and finishing at the cervix, so that instead of a flabby bag one had a stiff, sausage-like mass. One then proceeded to push this elongated "sausage" back into the vagina, meantime slowly unrolling the bandage from the cervix backwards. The woman was given a "spinal," a new thing in those days, and it failed to work. I then volunteered to give her chloroform and ether. . . . The operation was a complete success. The woman ran a small temperature for two days and then made an uninterrupted recovery, being discharged from hospital within three weeks.

Persistent Hiccough

Dr. GAVIN DUNLOP (Worksop, Notts) writes: The case described by Dr. B. Gallen (April 22, p. 960) could have been due to psychological causes, especially as the onset followed an acute attack of vomiting. This observation applies less cogently to an attack experienced by myself and a dentist friend a few years ago. We set out to visit a mutual friend who lives at a distance, and on the way we stopped at a hostelry where we each had half a pint of beer. This was the only thing we took in common that day. The following morning we found that we had both got an intractable hiccough which had come on during the night. The attack lasted for three days, and we were equally affected. In common with Dr. Gallen's patient, we found that pethidine was the best remedy.

Obituary

E. M. CORNER, M.Ch., F.R.C.S.

Mr. E. M. Corner, consulting surgeon to St. Thomas's Hospital and to the Hospital for Sick Children, Great Ormond Street, died on May 2 at his home in Beaconsfield, at the age of 76. He was the fifth son of the late Dr. Francis Mead Corner, a general practitioner in Poplar. Two of his elder brothers were Dr. Frank Corner, who died in 1939, and Dr. Harry Corner, who died in 1945; the late Dr. Cursham Corner was a first cousin.

Edred Moss Corner was educated at Epsom College, where he was head prefect, captain of the XV, and a member of the XI. He was intensely loyal to his old school, being the first subscriber to the memorial fund started after the end of the first world war, and the originator of, and again the first subscriber to, the war memorial and centenary fund now being organized there. He won a scholarship at Sidney Sussex College, Cambridge, and took a first-class in the natural sciences tripos of 1894. He came to London for his clinical studies at St. Thomas's Hospital, where once again he carried off the highest honours. In 1898 he graduated M.B., B.Ch., and a year later he took the F.R.C.S., going on to the M.Ch. in 1906. After the usual resident appointments at his own hospital and at Leeds, Corner was appointed assistant surgeon to St. Thomas's in 1900, only two years after qualifying. Later he was on the honorary staff at Great Ormond Street, as well as at Queen Mary's Hospital, Roehampton, and he became consulting surgeon to Epsom College. At the Royal College of Surgeons he was Erasmus Wilson Lecturer in 1905, and Arris and Gale lecturer and Harveian lecturer in 1919, which testifies to his high repute among his colleagues. In 1903 he married Miss Henrietta Henderson, of Dundee.

Corner was an exceedingly tall man of robust frame and commanding presence. His progress as a London consultant was steady, and he was already reaching the peak of eminence to which his notable abilities as a surgeon and a teacher entitled him, when in 1921 he was struck down by a disabling illness. This cut short his career just as he was reaping the due rewards of hard work and genuine craftsmanship in his profession. He had to resign all his appointments and give up practice. For a time he was able to do some professional work as superintendent of a convalescent home at Great Missenden, but presently his sight failed and he retired to a house at Beaconsfield, at which his old friends were always welcome. This tragic blow he bore with admirable fortitude, sustained by the devoted care of his wife. He had been totally blind and very lame for many years preceding his death.

In the 1914–18 war Corner served as a major in the R.A.M.C. His surgical experience made him a most valuable member of the staff at Roehampton and in the amputation clinic set up at St. Thomas's Hospital. He was especially interested, also, in children's diseases, and his work at Great Ormond Street was very near to his heart. He wrote several textbooks, which are now of course outdated. Corner came of Yorkshire stock, originally from Lythe, near Whitby. He was related to many families in the latter town and in the neighbouring villages—some of his lines of descent are traceable there to the reign of Henry VII and even earlier. He was a member of the British Medical Association for many years, serving as secretary of the Section of Diseases of Children at the Annual Meeting in 1907, and vice-president of the same section, including orthopaedics, at that of 1912. He was honorary secretary of the Old Epsomian Club from 1907 to 1920, and later its president.

To Mrs. Corner and her three children, one of whom is lecturer in botany at Cambridge University, the sympathy of a large circle of friends at St. Thomas's and in the profession generally will be extended.—H. R.

FRANCIS R. PACKARD, M.D.

Dr. Francis R. Packard, the well-known medical historian and a distinguished otolaryngologist, died on April 18 at the Pennsylvania Hospital, at the age of 80.

Dr. Packard had been chief of the otolaryngology service at the Pennsylvania Hospital from 1920 until his retirement in 1931. The son of Dr. John Hooker Packard, he was born in Philadelphia on March 23, 1870, and graduated from the University of Pennsylvania in 1889 and from the medical school three years later. During the Spanish-American War Dr. Packard served as first assistant surgeon in the Second Pennsylvania Volunteers. As a major in the 1914–18 war he was appointed consultant for the district of Paris in 1918. Dr. Packard was honorary keeper of the archives of Pennsylvania Hospital, with which he was associated for half a century, and he wrote a history of the hospital from 1751 until 1918. He owned one of the largest medical libraries in the United States and was the author of many medical works, including *History of Medicine in the United States, Diseases of the Ear, Nose, and Throat, The School of Salerno,* and *Life and Times of Ambroise Paré.* He was responsible for a fine reprint of Macmichael's *Gold-Headed Cane.* His greatest contribution to medical history was perhaps his editorship of the *Annals of Medical History,* from its start in 1917 until 1942, when it ceased publication.

Dr. Packard served as president of the American Laryngological Society in 1930, the American Otological Society in 1936, and the College of Physicians of Philadelphia from 1931 to 1935. In 1942 he received the Newcomb award, one of the highest honours among nose and throat specialists in America, for scientific attainment in rhinology and laryngology. He was an honorary member of the Academy of Stomatology of Philadelphia, and a member of the Philosophical Society, the Philadelphia Shakespeare Society, and the Historical Society of Pennsylvania. He is survived by four daughters, three of whom are married.

Dr. ALAN WILLIAM HOLTHUSEN died on April 20 after a short illness. Born in 1885, he was educated at Bancrofts School and St. Bartholomew's Hospital, where he qualified M.R.C.S., L.R.C.P. in 1908, graduating M.B., B.S. a year later. Starting in general practice at Forest Gate in 1908, he remained there until the 1914–18 war, when he enlisted in the R.A.M.C. He served in France with the 13th Battalion of the Essex Regiment and also in Mesopotamia. In 1919 he settled in Westcliff-on-Sea and continued in practice there until his death, apart from a break during the recent war when he was surgeon and afterwards medical superintendent at the London Fever Hospital, a tour of duty that undermined his health. For many years Dr. Holthusen was honorary surgeon to Southend Victoria Hospital, and in 1932 he was one of the three general practitioners appointed assistant surgeons to the new Southend General Hospital. In a varied and active life one of his principal interests was in serving as divisional surgeon to the St. John Ambulance Brigade and to the fire brigade. A member of the Southend Insurance Committee from 1922, he represented the district for several years at the Panel Conference.

In 1948, on joining the Southend Executive Council, he was elected chairman of the Finance and General Purposes Committee and of the Pharmaceutical Committee; he was also a member of the Medical Committee. In the B.M.A. Dr. Holthusen was elected president of the Essex Branch in 1934–5 and chairman of the local division in the following year. An active sportsman in his younger days, he played football for Clapton, and in later years he became a bowls enthusiast. His greatest interest, however, was in cricket. When his playing days were over he became president of the Westcliff Cricket Club and chairman of the committee which organized the local county cricket weeks. "Susan," as he was affectionately known to his colleagues, will be remembered best by the Southend Doctors' Cricket Club, which is believed to be unique and which he founded nearly 30 years ago. He ran it so enthusiastically that with his continued encouragement it has flourished up to the present year, when it has a complete fixture list extending from the beginning to the end of the season. Many members of the staff of the B.M.A. will recall the occasion in 1922 when the Southend doctors, including Dr. Holthusen, met a team from Headquarters on the cricket field at Southend-on-Sea. His unexpected death in the midst of a life so full of zest was a shock to his colleagues and friends, who extend their sympathy to his widow and three daughters.—M. L. M.

Dr. JAMES ANDERSON GOODFELLOW, of Chesterfield, died at his home there on May 1, at the age of 85. He was born in Selkirk and graduated M.B., C.M. at the University of Glasgow in 1887. Soon afterwards he settled in Chesterfield, where he soon built up a large general practice in and around the Brampton area. Over many years he kept completely abreast of the changes in treatment and practice, and his activity became only a little less after his retirement in 1922. From then onwards he took up in particular the study of iodine and iodine deficiency, and he had always held that this country should insist on the provision of iodized salt. His recommendation on this point, which has recently been accepted by the Government, following the reports of the Medical Research Council, was made in the first place as long ago as 1935. Dr. Goodfellow was also interested in the pasteurization of milk and in many other aspects of social medicine.

K. B. MacG. writes: Dr. J. A. Goodfellow was a great physician, a man whose reputation for endless endeavour to find the truth will long remain in scientific circles, and a doctor who found no item too small to investigate or too troublesome to examine closely. Through many years in Chesterfield he introduced into the practice of medicine many new methods, and on retirement kept in touch with the profession. He was a member of the British Medical Association for a long time, and until very recent years a good attender at any meetings of interest. He was able to discuss matters of interest with any doctor with whom he came in contact, or with any veterinary surgeon, or even a farmer or gardener. In photography and motor-cars and travel he had had great experience. In legal and business affairs he was very skilful. He will be greatly missed by his many friends and his very many old patients in Chesterfield and the surrounding countryside.

Dr. FREDERICK WILLIAM POOLE died at Bristol at the age of 60 on March 25 after a short illness. After graduating M.B., Ch.B. in 1917 at Edinburgh University he joined the Royal Navy and served till the end of the war. On demobilization he went into general practice in Norwich at Magdalen Road, and there he was assisted by his wife, Dr. Mary Poole. She died before him, and was one of the first women doctors to practise medicine in Norwich. In 1930, on being appointed a regional medical officer of the Ministry of Health, he moved to London. Later he went to Exeter and in 1939 was transferred to Bristol. Dr. Poole, or Freddie as he was known to his colleagues and friends, was a natural musician and an accomplished violinist. In the realms of sport he spent much of his leisure time on the golf course and was a difficult man to beat. Socially he was much in demand, his humour and sense of the ridiculous always keeping his friends in good spirits. He is survived by his daughter, Mrs. Jay Lennard, who came home from West Africa to be with him during his illness.

Medico-Legal

TUBERCULOSIS AND INDUSTRIAL INJURY BENEFIT

Just over a year ago the Court of Appeal granted compensation under the Workmen's Compensation Acts to a nurse who had contracted tuberculosis while nursing tuberculous patients.[1] This was a further extension of the tendency of the courts to widen the concept of "accident" to include a number of mishaps resulting from cumulative processes. Hernia and Raynaud's disease following the use of pneumatic tools have been called "accidents." Anthrax has come under the same heading, the "accident" here being the entry of the bacillus. In the case of *Pyrah* v. *Doncaster Corporation* Lords Justices Cohen and Denning accepted the view of the county court judge, who held that in the particular circumstances of this case every time the nurse inhaled tubercle bacilli an "accident" was constituted. Exact dates could not be fixed, but all these "accidents" took place in the course of her employment. Lord Justice Bucknill dissented, holding that the nurse's tuberculosis was the result of a gradual process of breathing air containing noxious bacilli.

A correspondent (p. 1143) has drawn attention to the case of a tuberculosis officer who himself contracted tuberculosis. His claim for industrial injury benefit was disallowed recently by the Tribunal set up under the National Insurance (Industrial Injuries) Act, 1946. The Tribunal, whose findings are summarized below, upheld the chief insurance officer's appeal from an award of industrial injury benefit by the local tribunal and disallowed the claim for benefit.[2]

Findings of the Tribunal

The claimant was a doctor who had been engaged in attending persons suffering from tuberculosis since August, 1946. In June, 1947, he was appointed assistant tuberculosis officer to a county council. During the course of his employment he was constantly attending tuberculosis patients in the clinic and in their homes. The claimant said in his evidence at the oral hearing of this appeal that he was always liable to inhale bacilli and that he thought that some patients must have coughed up sputum in his presence. In June, 1947, when he was appointed, he was examined and found to be free from tuberculosis. He was in the habit of making routine examinations of himself every four to six months, and up to and including November 17, 1948, these examinations showed him to be free from infection. An examination on December 23, 1948, however, showed a lesion the size of a sixpence and the claimant was subsequently found to be suffering from pulmonary tuberculosis and became incapable of work by reason of that illness on January 11, 1949. His claim for industrial injury benefit was disallowed by the insurance officer but allowed by the local appeal tribunal, from whose decision this appeal was brought by the chief insurance officer.

It was admitted that the claimant's contraction of tuberculosis arose out of and in the course of his employment, but it was contended that this contraction did not constitute injury by accident within the meaning of section 7 (1) of the National Insurance (Industrial Injuries) Act, 1946, but resulted from a process and consequently fell within the decision of the House of Lords in *Roberts* v. *Dorothea Slate Quarries Co., Ltd.*[3] The application of that decision to tuberculosis was discussed in *Pyrah* v. *Doncaster Corporation*, but the county court judge (upon whose findings of fact the judgment of the Court of Appeal was necessarily based) had not the advantage of the medical opinions which were put before the Tribunal.

Medical Views

Evidence was given on behalf of the claimant by Dr. William Brooks, who expressed the opinion that the claimant was probably infected with tuberculosis by one bacillus or a few

[1] *British Medical Journal*, 1949, 1, 960.
[2] Decision No. C.I. 83/50; Regd. Paper No. C.I. 217/49; I.O. 1825/II/49; S.782/6A/47/49.
[3] *British Medical Journal*, 1948, 2, 664.

bacilli on a single occasion between July 5 and December 23, 1948. The claimant also relied upon the opinion given in connexion with another case by Dr. Norman Tattersall, who stated that in that case the tuberculosis was due to infection on one occasion or at most on a series of distinct occasions and that he did not believe it to have been the result of a cumulative process.

If it was to be accepted that the claimant's contraction of tuberculosis was the result of an infection on a single occasion, the decision of the courts under the Workmen's Compensation Acts would justify the view that his incapacity had resulted from injury by accident within the meaning of section 7 (1) of the Industrial Injuries Act, 1946. It was submitted on behalf of the chief insurance officer, however, that the weight of medical opinion favoured the view that the infection in this case resulted from the cumulative effect of a series of penetrations of the lung by a substantial quantity of bacilli occurring over a substantial period of time. In accordance with Regulation 26 (1) of the National Insurance (Industrial Injuries) (Determination of Claims and Questions) Regulations, 1948 (S.I. 1948, No. 1299), certain questions which had been agreed between the applicant's advisers and the chief insurance officer, together with a note of the evidence given by Dr. Brooks, were submitted to a medical practitioner nominated at the request of the Tribunal by the President of the Royal College of Physicians. Only the first two of these questions and answers were material.

Q.—Is it likely that clinical infection could be the result of penetration of living tissue on a single occasion by a single bacillus or a small number of bacilli ?

A.—Much investigation has been done and many papers have been published concerning the probability or otherwise that clinical infection could result from penetration on a single occasion by a single bacillus. Authorities are divided on this subject. As a result of some work published in America and Scandinavia, there is a considerable body of opinion at the present time that infection can and does occur in this manner. In my opinion, the data supporting this theory fall very far short of proof, and my personal belief is that, if infection ever develops in this way, it is exceedingly rare.

Q.—Where the only evidence of active disease is in a single small area of the upper lobe of the left lung and there is no history of previous infection, is it likely or unlikely that clinical infection was due to the cumulative effect of a series of penetrations by a substantial number of bacilli occurring over a substantial period of several months ?

A.—My personal opinion is that it is likely that clinical infection was due to the " cumulative effects, etc."

At the request of the claimant's advisers a further hearing was held, and it then appeared that there was an ambiguity in the second of these questions (and consequently in Dr. Marshall's answer) in that no indication was given in the question as to the length of time which was to be assumed to have elapsed between each penetration. It was therefore thought desirable to ascertain from Dr. Marshall how long, in his opinion, the interval between each penetration was likely to have been. His answer was that in his opinion the penetration probably occurred " almost if not quite daily."

In *Roberts* v. *Dorothea Slate Quarries Co., Ltd.*, when he drew the distinction between the type of case in which incapacity is held to be the result of injury by accident and that in which it is held to result from process, Lord Porter said that in the latter type " there is a continuous process going on substantially from day to day, though not necessarily from minute to minute or even from hour to hour," which gradually and over a period of years produces incapacity." A series of penetrations which occurred " almost if not quite daily " over a substantial period of several months would, in the view of the Tribunal, fall within the category of process. It was true that Lord Porter spoke of " a period of years," whereas in the question put to Dr. Marshall " several months " was given as the duration of the series of penetrations. However, Lord Porter had referred with implied approval to cases in which it had been held that the development of a disease in a much shorter time than twenty years did not constitute injury by accident. It had also been held recently that injury from contact with salt water for only three months should be regarded as resulting from process and not accident. The Tribunal held, therefore, that in the present case, if the penetration did occur " almost if not quite daily " for several months, it should be regarded as having been due to process and not to accident.

The decision then rested on acceptance of the answers given by Dr. Marshall or, alternatively, of the evidence of Dr. Brooks, and the opinion of Dr. Norman Tattersall. It would have been difficult to decide between the views of these eminent authorities, but fortunately it was not necessary or desirable to do so. The burden of proving that his incapacity resulted from injury by accident rested upon the claimant. Though Dr. Brooks appeared to hold the opinion that the infection in this case was due to penetration on a single occasion, Dr. Tattersall, while expressing a similar opinion, added, " I therefore suggest that scientific knowledge has not yet advanced to the stage where it is possible to answer these questions dogmatically." Dr. Marshall put forward the contrary view as his personal opinion and pointed out that there was a considerable body of opinion at the present time that infection could and did result from penetration on a single occasion by a single bacillus or a small number of bacilli. He also emphasized the difficulties in answering the questions put to him owing to the " great variability of tuberculosis."

It appeared to the Tribunal, therefore, that in the present state of medical knowledge (so far as it was reflected in the evidence before them) it was impossible for a non-medical tribunal to hold that the claimant had proved that his incapacity resulted from injury by accident rather than from a process as described in the *Dorothea* case. In these circumstances it must be held that the claimant had not established that his incapacity resulted from injury by accident.

Medical Notes in Parliament

MEDICAL BILL

The House of Lords on May 4 went into committee on the Medical Bill, which had been given a second reading on April 18 (*Journal*, April 29, p. 1011).

Lord WEBB-JOHNSON moved to omit in subsection (1) of Clause 2 the phrase " not being less than 12 months." He said his object was to avoid the rigid laying down of a period of not less than 12 months for intern service. He hoped that removal of this rigidity would allow the reform proposed in this part of the Bill to come into operation at an earlier date. It would also leave the General Medical Council discretion to vary the regulations and the period in times of difficulty, as when dealing with the demands for doctors for the Forces.

Lord SHEPHERD said the Government thought that when the general services were in full working order not less than 12 months as an intern would be necessary. The Goodenough Committee had been firmly of opinion that the period should not be less than 12 months. However, those who supported the amendment did not think 12 months was too long; they merely wished to solve a difficulty which might be foreseen at the beginning, or in times of national stress. In that spirit he accepted the amendment.

The House then agreed to Lord Webb-Johnson's amendment.

Lord SHEPHERD moved to insert after subsection (3) of Clause 2 words which would enable the doctor to count time spent in midwifery either as time spent in medicine or as time spent in surgery, as he chose. The amendment would empower the body which gave the qualifying diploma to indicate the length of time which the doctor had to spend in each of the three subjects.

Lord LLEWELLIN said this amendment would make the procedure more elastic and more workable. The House then agreed to the amendment. Consequential amendments moved by Lord Shepherd were accepted without debate, and Clause 2 as amended was then approved. Lord SHEPHERD then moved to insert after Clause 2 the following new Clause.

Special provisions as to employment in Health Centres

" .—(1) For the purposes of the last foregoing section the expression " institution " includes a health centre if, and only if, it is a centre provided under section twenty-one of the National Health Service Act, 1946, section fifteen of the National Health Service

(Scotland) Act, 1947, or section seventeen of the Health Services Act (Northern Ireland), 1948.

"(2) Employment in such a centre shall not be treated as employment for the purposes of the last foregoing section unless it is either:

(*a*) employment by a registered medical practitioner in the provision of general medical services under Part IV of the said Act of 1946, Part IV of the said Act of 1947 or Part II of the said Act of 1948, or

(*b*) employment in the provision of out-patient services as are mentioned in paragraph (*e*) of subsection (1) of section twenty-one of the said Act of 1946 or paragraph (*d*) of subsection (1) of section fifteen of the said Act of 1947, or such out-patient services, other than supplementary eye services, as are mentioned in paragraph (*b*) of subsection (1) of section seventeen of the said Act of 1948.

"(3) The Council may by regulations provide that the period of employment in a health centre which may be reckoned towards the completion of any of the periods mentioned in paragraph (*a*) of subsection (2) of the last foregoing section shall not exceed such period as may be specified in the regulations."

He said it would be proper for him to express the appreciation of the Government at the courtesy of Lord Horder in not having moved his own amendment on the same point. He believed the Government amendment covered the whole case. It made it possible for service in an approved health centre to be counted towards the intern period.

The House approved the new Clause and also Clause 3.

On Clause 4 Lord SHEPHERD moved to insert a provision that in Section 40 of the Medical Act, 1858, which made it an offence falsely to pretend to be registered, there should be inserted the words "or provisionally registered by virtue of Section 4 of the Medical Act, 1950." The amendment proposed that anyone falsely professing to be a provisionally registered practitioner should suffer in the same way as a person pretending to be a medical practitioner.

The House agreed to the amendment and to Clause 4 as amended, and also approved Clause 5 and a drafting amendment to Clause 6. Clause 7 was approved without debate.

Elected Representatives

On Clause 8 Lord SHEPHERD moved to increase the numbers of members of the General Medical Council elected by practitioners resident in England and Wales to eight, instead of six as originally proposed in the Bill. He recalled that Lord Llewellin had suggested that the total number for Great Britain should be raised from 9 to 12, but said the Government had reached the conclusion that 11 would be a better number. The amendment proposed that in England and Wales the number should be increased from six to eight, and by a subsequent amendment one of the eight would be a separately elected representative from Wales. There would be two elected from Scotland and one from the whole of Ireland. Ireland had always been an entity in the medical world.

The House then agreed to this amendment and to certain consequential amendments providing for a Welsh representative and ensuring that the increased number of members would be ready to sit by the appointed day.

Minor amendments to Clause 9 were agreed to, and Clauses 10 and 11 were approved without debate.

Lay Members of the Disciplinary Committee

Lord SHEPHERD moved an alteration in Clause 12 to ensure that the only matters which would be left with the General Medical Council once the Disciplinary Committee had been formed would be those cases which were actually in course of trial. The House agreed to this amendment and to Clause 12 as amended.

Lord HACKING then moved to amend subsection (1) of Clause 13 by omitting the provision that at least six members of the Medical Disciplinary Committee should be elected members of the Council and at least one should be a person who was neither a registered medical practitioner nor a holder of a qualifying diploma. He proposed to substitute that "three shall be persons none of whom is a registered medical practitioner nor the holder of a qualifying diploma." He said his object was to increase from one to three the number of laymen on the Disciplinary Committee. The best method of satisfying the general public was to have a fair proportion of laymen on the Disciplinary Committee. He did not believe that the presence of one layman on the Committee would give the appearance of doing justice to the public. What would happen if this one layman happened to be ill and unable to attend? There were to be three laymen on the General Council, which did not deal with discipline at all but with qualifying examinations, approval of hospitals, the instructions to be given at various establishments, and also the preparation of the *British Pharmacopoeia*. What did laymen know about any of these subjects? The laymen did, however, know something about how a doctor should behave, and yet on the Disciplinary Committee, according to the terms of the Bill, the public would have only one representative. That was out of proportion and was wrong. He believed that even three laymen were insufficient to deal with matters of discipline, but since drastic alterations of the Bill might not be possible he might have to be satisfied with two.

Lord MORAN said his experience of the General Medical Council had been that a Disciplinary Committee could be effective only if the members had a legal training, or, if they had not, that they received judicial direction, as juries did. There was little doubt that those who appeared before the General Medical Council would appeal if they lost their case and would then appear before the highest legal luminaries. He thought there should be this right of appeal. Things had been done which would improve the procedure before the Disciplinary Committee. First there was the reduction of that Committee to nine members, secondly there was the right of appeal, and now the proposal that there should be more laymen. He supported Lord Hacking.

Lord SHEPHERD said the Government sympathized with the object of the amendment, but could not accept Lord Hacking's full demand. The Disciplinary Committee had to look into the cases of medical men and must be predominantly a committee on which medical experience figured. Other difficulties arose if the House began to specify by figures how the Disciplinary Committee should be made up. If Lord Hacking withdrew his amendment he was authorized to offer two lay representatives instead of one on the Disciplinary Committee. He suggested the insertion of the words, "Two shall be representatives who are neither registered practitioners nor the holders of qualifying diplomas."

Lord HACKING said he was willing to withdraw his amendment and to move it afresh in the form suggested by Lord Shepherd.

Lord LLEWELLIN suggested that the new phrase proposed in the amendment should begin with the words, "At least two." That would allow the General Medical Council to appoint more if they wished. Lord Hacking and Lord Shepherd agreed to this suggestion, which was then accepted by the House.

A Smaller Tribunal

Lord LLEWELLIN moved in subsection (4) of Clause 13 to leave out "nine" and to insert:

"five; and in the Committee shall make arrangements for securing that, except where it appears to the President or a member of the Committee authorized by him to act on his behalf that there are circumstances requiring the presence of a greater number of members of the Committee, not more than nine members of the Committee shall attend for the hearing of any case."

He recalled that on the second reading he had suggested that the Disciplinary Committee was too large. He still thought so except perhaps in exceptional cases. Where the question before the Committee was of alleged misconduct by an individual, the case could be better conducted by a smaller tribunal. His amendment sought to reduce the quorum to five, which would normally be the president and four people sitting with him, and also to provide that the Committee should not without a particular reason sit in greater strength than nine members. Parliament had recently taken a similar line in the Justices of the Peace Act. People coming before the Committee would have more reason to feel that the cases had been fairly dealt with by a tribunal recognizable as a tribunal, the members of which would have been present all the time. He visualized that one of the panel of nine would be a lay member, if not two. The reason why a lay member was originally appointed was

that some outside person could be present, who, in case all the doctors banded together—if such a thing could happen—could if necessary draw public attention to the matter by resigning. One lay member should always be present.

Lord NATHAN moved to amend Lord Llewellin's amendment by inserting a proviso that of the nine members of the Committee attending the hearing of any case one should be a lay member. He said he was at present the only lay member of the General Medical Council and that when the Bill became an Act he would be the only lay member deemed to have been appointed under the Act. He saw on reflection that his amendment might be interpreted as ruling that the panel of nine could not meet unless a lay member were present. He did not think more could be wished than that there should be a nominated lay member among the panel of nine, and if the lay member was unable to attend that would be no reason why the panel should not sit provided there was a quorum.

Lord HACKING remarked that from his experience he thought justice had been done even with a panel of 39. Counsel defending clients did not appear to be in a difficult position because of the size of the panel before which they had to appear. He asked how the nine were to be selected from the 19 members of the panel. Was that to be left to the president? He pointed out that Clause 14 said that the Disciplinary Committee should make rules about the times and places of its meetings and the mode of summoning the members. Did Lord Llewellin consider it right that the smaller panel of nine should take these decisions and make rules?

Lord LLEWELLIN said that that was clearly what would be done except where it was thought that the whole of the Committee should appear on the panel suggested and that the whole Disciplinary Committee should be summoned to make the rules. The Committee as a whole were to make these rules just as quarter sessions as a whole arranged who should sit on the panel of justices to hear cases at different quarter sessions.

Lord SIMON said he had never appeared before the General Medical Council but had, when at the Bar, appeared a good many times before the disciplinary tribunal of the solicitors, which usually consisted of five members. There were three members as a rule sitting in the Court of Appeal, although it might include six or even nine. The same thing was true of Scotland. From his own experience as an advocate and as a member of such tribunals, he felt there were great advantages in having the members of a tribunal strictly limited. It was most important that every member of a tribunal which had to decide a limited and serious issue should give his whole mind to it all the time. He recalled that a committee appointed by the House to deal with a Private Bill consisted of five lords. Large numbers had the effect of relieving each member of his full sense of responsibility. In this matter numbers were not the hallmark of safety.

The LORD CHANCELLOR said he entirely agreed with Lord Simon. The great Coke had said, "You cannot get justice from a mob of judges." He would far rather have a tribunal of nine than 19.

Lord SHEPHERD said the Government would accept the new amendment of Lord Llewellin. It sympathized with Lord Nathan, but did not think that his amendment as drafted would give what he desired. If Lord Nathan withdrew his amendment to the original amendment the Government would meet him on the report stage.

Lord Nathan then withdrew his amendment and Lord Llewellin's original amendment was accepted.

Lord WEBB-JOHNSON moved to leave out subsection (5) of Clause 13 and to insert:

"All acts of the Committee shall be decided by the votes of a majority of the members present at any meeting." He said this amendment was devised to ensure that a conviction carrying such a terrible penalty should not be reached by the casting vote of the chairman. It also covered restoration to the *Register*. Lord Shepherd accepted this amendment and Clause 13 as amended was approved.

Lord LLEWELLIN moved on Clause 14 to insert a provision that no person should be compelled under a writ issued to any party to the proceedings to produce any document which he could not be compelled to produce on the trial of an action in the High Court. Similar words had always been inserted when power was given by statute to similar bodies. Lord Shepherd accepted the amendment and the House agreed to it.

Lord WEBB-JOHNSON moved an amendment to ensure that now that subpoenas could be issued and evidence taken on oath the accused individual should be entitled to a verdict of "not guilty" when he was found not guilty.

Lord HACKING remarked that the words now used in the case of a doctor who was found not guilty were "the facts alleged against the doctor have not been proved to the satisfaction of the Council." If the individual was told definitely that he was not guilty the finding would be better understood, especially in some of the provincial newspapers. The House accepted this amendment, approved Clause 14 as amended, and Clauses 15 to 18 without debate.

Restoring Names to the Register

Lord SHEPHERD moved on Clause 19 an amendment to put on the same footing all applicants for restoration to the *Register*. Under the Bill as it stood a doctor whose name was erased at the November session of the Disciplinary Committee would be able to submit an application for restoration at the subsequent November session of the Committee and if that were refused could apply again in the following May, after only six months. On the other hand, a doctor whose name was erased in May could apply for restoration in May but, if refused, would have to wait until the following May, a period of 12 months. He moved an amendment to put both applicants on the same footing by leaving out "calendar year" and inserting "period of 11 months." This amendment was accepted.

Lord SHEPHERD next moved to insert after subsection (3):

"( ) Subsection (2) of section fourteen of this Act shall not apply to proceedings under this section; but the Committee may for the purposes of such proceedings make rules as to any of the matters mentioned in the said subsection (2), and subsections (3) and (4) of the said section fourteen shall apply to rules under this section as they apply to rules under the said subsection (2)."

This new subsection enabled the Medical Disciplinary Committee to make rules about the procedure for applications for restoration which could deal with any of the matters provided for in Clause 14 (2). That subsection had been drafted with proceedings for erasure particularly in mind, and some of its provisions did not quite fit the proceedings for restoration. In the case of restoration it would not be appropriate that notice should be given that "proceedings were to be brought." In general it was intended that the Committee should make rules broadly similar to proceedings for erasure, including the rules giving any party to the proceedings the right to be heard by the Committee or to be represented by counsel or solicitor. The last part of the new subsection made it clear that the Committee would have to consult with the medical profession before making the rules and that these rules would be subject to the approval of the Privy Council.

The Committee agreed to the proposed new subsection and to Clause 19 as amended.

Medical School Visitors

Lord MORAN moved on Clause 20, subsection (1), that the appointment of persons not being members of the Council to visit places where instruction was given to medical students should be subject to the approval of the Privy Council. He said his purpose was to avoid unnecessary multiplication of inspections of medical schools. During the 25 years in which he had been dean of a medical school he had been convinced that these inspections quickened the pulse of a school and led to a review of things left undone. However, there was machinery already for securing these benefits and nobody suggested that this machinery was inefficient. In London 12 medical schools were inspected by the University Grants Committee with reference to finance and by the University of London on academic standards. If the Clause were passed as drafted the London schools would be inspected by three different bodies. These inspections might suggest changes in

policy, and so there would be three bodies governing policy, which was bound to create confusion. Everyone was convinced that Parliament ought to strengthen the hold of London University over the constituent medical schools, and that hold would certainly not be strengthened by a rival method of inspection. All that was necessary was one inspection and not two. That could be brought about if the external inspector of London University represented the General Medical Council.

Lord SHEPHERD said the General Medical Council was entitled to know that teaching in medical schools was efficient and that the students got all they had a right to expect. He understood that perturbation had been expressed in London University on the subject. There had been discussions between representatives about arranging for university and General Medical Council inspections being undertaken jointly.

Lord LLEWELLIN took this to mean that while the present General Medical Council and the present governors of London University continued they agreed that inspectors who went on behalf of the University should act for the General Medical Council also. That seemed satisfactory to him. He remarked, however, that such a state of things might not last permanently and that Lord Shepherd's announcement had not been given as a Government undertaking. He suggested the inclusion in the Bill of the words providing that the matter should be in the hands of the Government of the day.

Lord SHEPHERD gave an undertaking that if Lord Moran would withdraw his amendment the Government would look into the matter again before the report stage. Lord Moran then withdrew his amendment, and Clause 20 was agreed to, as were Clauses 21 to 23.

On Clause 24 Lord SHEPHERD moved an amendment to cover the omission of the Welsh universities from the arrangements provided. The House accepted the amendment and the Clause, as also Clause 25.

Lord WEBB-JOHNSON then moved to insert a new clause:

Amendment of s. 40 of the Medical Act, 1858

" . Section forty of the Medical Act, 1858 (which provides for the imposition of a penalty upon any person falsely pretending to be a registered person) shall have effect as if for the word 'twenty' therein, there were substituted the words 'five hundred.'"

He said the proposed new clause was designed to increase the inadequate penalty of a fine of £20 on anyone who falsely pretended to be a registered medical practitioner to a sum of £500, which the House would not think excessive for such an offence.

Lord SHEPHERD said the Government was prepared to accept this amendment and the House agreed to it.

Lord SHEPHERD moved a new clause dealing with subsistence allowances for members of the Council. He said the General Medical Council had always assumed that it was entitled to meet the expenses of members of the Council, but the clause covered the subject in case there was any doubt. The House accepted the new Clause. Clauses 27 to 29 were agreed to.

On Clause 30 Lord LLEWELLIN moved an amendment to ensure that either House of Parliament, by negative resolution, would be able to pray against an order made under Clause 2 of the Bill. He said these would probably be the most important orders made under the Bill. They would affect a man whose training before he could be a fully registered practitioner had to be by attachment to a hospital or institution. The last thing the House wished to see was a man who had already spent five or six years obtaining qualifying degrees having to wait about because there was not a hospital or institution in which a place could be found for him. That was a matter on which Parliament should keep control. He pointed out that under the Bill Parliament could already pray against other less important provisions.

Lord SHEPHERD accepted this amendment, and the House agreed to it and to Clause 30 as amended. It then agreed to the remaining clauses and to a consequential amendment moved by Lord Shepherd in a clause dealing with enactments applicable to provisional registration.

The schedule as amended was approved and the committee stage ended.

N.H.S. Contraception.—On April 6 Mr. ERNEST THURTLE asked what regulations under the National Health Service precluded doctors in the Service from giving to patients who applied for it information and advice about methods of contraception. Mr. BEVAN replied that there was nothing whatever in the regulations to preclude this, nor was there any obligation on the doctor to do it unless he considered it necessary for the purposes of medical treatment.

Iodine Allergy.—Sir HUGH LUCAS-TOOTH, also on April 6, asked whether Mr. Bevan knew that some people were allergic to iodine. He asked how he proposed to avoid causing grave inconvenience together with a risk of serious illness to such people when he required all salt for human consumption to be iodized. Mr. BEVAN said there was no evidence whatever that the addition of a salt of iodine in the very minute quantities proposed would have any adverse effects.

Cost of Board and Lodging for Hospital Staff.—On May 2 Mr. THORNTON-KEMSLEY inquired on what grounds regional hospital boards in Scotland had been instructed to increase the charges for board, lodging, and laundry provided in hospital for medical, administrative, clerical, and technical staffs and medical auxiliaries. Miss HERBISON said that regional hospital boards found that substantial anomalies existed, both between the charges at different hospitals and between the charges for different groups of staff at the same hospital. Accordingly, for groups for which no standard scales had been fixed by Whitley Councils, the regional boards themselves jointly drew up standard scales which were in some cases higher than those previously in operation. Charges to particular individuals had however been raised only where other conditions of service had also been revised, or where accommodation was occupied not as a condition of service, but for personal convenience.

Hospital Beds.—On December 31, 1949, there were about 390,000 occupied beds in the National Health Service in England and Wales, of which 140,000 were occupied by mental and 47,000 by mentally defective patients; in addition, some 1,400 beds were allocated to neurological and neurosurgical departments.

Universities and Colleges

UNIVERSITY OF DUBLIN

SCHOOL OF PHYSIC, TRINITY COLLEGE

The second Frederick Price Lecture will be delivered by Professor L. J. Witts, Nuffield Professor of Clinical Medicine in the University of Oxford, in the Dixon Hall of the College on Thursday, May 18, at 4.30 p.m. His subject is "The Life of the Red Blood Cell."

UNIVERSITY OF LONDON

A course of two lectures on "Les Problèmes Fondamentaux de la Psychophysique dans la Science Actuelle" will be given (in French) by Professor H. Piéron, professor of physiology of sensation, Collège de France, at University College (Anatomy Theatre), Gower Street, London, W.C., on Tuesday and Thursday, May 16 and 18, at 5.30 p.m. The lectures are addressed to students of the University and to others interested in the subject. Admission is free, without ticket.

The following have been appointed members of the Senate for the period 1950–4: *Faculty of Medicine,* Mr. John B. Hunter (reappointed) and Dr. E. R. Boland. *General Medical Schools,* Sir Harold Boldero.

Mr. John Everidge, F.R.C.S., has been appointed a Fellow of King's College.

Professor J. M. Mackintosh has been appointed representative of the University on the governing body of the London School of Economics and Political Science.

The following have been recognized as teachers of the University in the subjects indicated in parentheses: *St. Bartholomew's Hospital Medical College:* Dr. W. E. Gibb (Medicine). *London Hospital Medical College:* Dr. W. W. Brigden (Medicine). *Guy's Hospital Medical School:* Dr. E. J. Moynihan (Dermatology); Mr. F. N. Glover (Surgery); Mr. A. R. F. Thompson, B.D.S., M.R.C.S., L.R.C.P. (Dental Surgery). *St. Thomas's Hospital Medical School:* Dr. M. D. Nosworthy (Anaesthetics); Dr. J. Bishop Harman (Medicine); Dr. Herbert Spencer (Pathology); Mr. R. J. V. Battle and Mr. J. B. Kinmonth (Surgery); Mr. R. J. Furlong (Orthopaedics). *St. Mary's Hospital Medical School:* Dr. F. J. G. Jefferiss (Venereal Diseases). *Middlesex Hospital Medical School:* Dr. E. W. Hart (Children's Diseases); Mr. P. H. Newman (Orthopaedics). *Westminster Medical School:* Mr. E. F. King (Ophthalmology). *King's College Hospital Medical School:* Dr. F. F. Cartwright (Anaesthetics). *Royal Free Hospital School of Medicine:* Miss Kathleen M. Robinson (Obstetrics and Gynaecology, probationary for two years from October, 1949).

The date of the first of the series of special guest-lectures to be delivered at the Institute of Neurology (announced in the *Journal* of May 6 (p. 1088)) has been changed from May 18 to May 24.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

Election of Fellows

At a quarterly Comitia of the College held on April 27, with the President, Dr. W. Russell Brain, in the chair, the following were elected Fellows:

S. L. Ludbrook (New Zealand), T. Rowland Hill (London), E. W. Skipper (Sheffield), J. Dockray (Isle of Wight), E. T. Baker-Bates (Liverpool), A. M. Nussey (Birmingham), R. K. Price (Hove), A. I. G. McLaughlin (London), W. G. A. Swan (Newcastle-upon-Tyne), A. W. D. Leishman (Sheffield), R. W. D. Turner (Edinburgh), J. V. Hurford (Surrey), J. R. Nassim (London), P. H. Sandifer, J. D. Spillane (Cardiff), A. M. G. Campbell (Bristol), H. R. Vickers (Sheffield), E. G. L. Bywaters (Berkshire), I. Macpherson (Leeds), R. E. Bonham-Carter (London), C. A. Young (London), R. Kauntze (London), J. W. Orr (Birmingham), H. J. Anderson (London), J. R. Squire (Birmingham), W. W. Brigden (Surrey), F. T. G. Prunty (Surrey), W. H. Hargreaves, Lieutenant-Colonel, R.A.M.C. (London), D. R. Cameron (York), F. Ridehalgh (Leeds), C. Wilcocks (London), R. F. Farquharson (Canada), N. M. Goodman (London), H. J. Ritchie (Australia).

The Baly Medal was presented to Sir Edward Mellanby for his services to physiology and his work on nutrition, with particular reference to the accessory food factors.

Surgeon Vice-Admiral Sir Reginald Bond was reappointed as representative of the College on the Professional Classes Aid Council.

Professor A. A. Moncrieff was appointed as representative of the College at the Annual Conference of Maternity and Child Welfare to be held in London from June 28 to 30.

Sir Leonard Parsons was appointed to attend the jubilee celebrations of the granting of the Charter to the University of Birmingham.

Dr. W. S. C. Copeman was reappointed as representative of the College on the committee of management of the Chelsea Physic Garden.

Dr. S. Cochrane Shanks was appointed official delegate to attend the sixth International Congress of Radiology, 1950.

Membership

The following candidates, having satisfied the Censors' Board, were elected Members:

M. N. Allen, M.B., I. McL. Baird, M.B., P. F. Bartley, M.B., P. D. Bedford, M.D., J. T. Cahill, M.D., H. Chandra, M.B., R. S. C. Couch, M.B., B. N. Das Gupta, M.D., M. Evans, M.B., L. C. Harris, M.D., K. S. Henley, M.B., I. S. Hodgson-Jones, M.B., D. V. Hubble, M.D., P. Hugh-Jones, M.D., P. E. Jackson, M.B., K. E. Jefferson, M.B., B. E. H. Koch, M.D., G. D. W. McKendrick, B.M., E. K. Macleod, M.B., B. G. Maegraith, M.B., K. S. Millingen, M.B., J. N. Montgomery, M.B., B. P. O'Connell, M.B., M. A. Peyman, B.M., R. G. Pitman, M.D., E. G. Rees, M.B., R. C. Roxburgh, M.B., R. H. Seville, M.D., W. J. Smith, M.D., P. J. D. Snow, M.B., P. R. Swyer, M.B., W. H. Taylor, B.M., W. Walker, M.B., N. C. T. Watford, M.B., S. C. Wigley, M.B.

Licences

Licences to practise were conferred upon the following 204 candidates (including 48 women) who had passed the final examination in Medicine, Surgery, and Midwifery of the Conjoint Board, and who have complied with the necessary by-laws:

D. R. H. Addenbrooke, D. J. Adderley, Rosie Ali, Anne M. Allen, J. G. Armstrong, R. A. Arthur, Pamela M. Bacon, M. A. Baddoo, Sybille E. Baer, H. Barkley, Cynthia Barnett, J. D. Baston, J. H. F. Batstone, R. Baxter, P. D. Bennett, J. Betkowski, Margaret E. Beynon, J. B. Blomfield, A. G. Blyth, F. G. L. Brafield, J. E. Bridger, W. Brooks, A. F. W. Brown, H. B. Brown, K. M. Bryant, J. Buchman, A. E. R. Buckle, D. M. Burley, D. Burman, R. P. Butt, B. E. Caddick, J. C. Camac, D. S. H. Cannon, J. S. Cardwell, P. M. Carpenter, C. C. D. Chandler, G. C. H. Chandler, J. Chesover, G. E. Chorley, J. A. Churcher, H. F. Clare, A. J. Clarke, C. H. Clarke, I. S. Coleman, P. J. Cook, J. T. Cope, Elizabeth McQ. D. Craig, R. Q. Crellin, J. M. D. Crook, J. D. Crowlesmith, Pauline M. Daniels, R. G. Davies, W. H. G. Davies, K. R. J. de Belder, J. J. de Caestecker, H. de Glanville, F. L. A. de Marnefe, J. Devota, G. Dougan, E. R. Duchesne, M. W. F. Dunning, A. C. de B. Eksteen, Cathleen M. Elliott, F. H. Evason, Margaret D. Findlay, J. Foley, R. A. V. Forrester, E. H. Franks, J. Fraser, J. W. Fullerton, I. T. Gabe, B. Gatoff, G. A. Ll. G. Glazebrook, M. P. W. Godfrey, D. Goldman, P. C. W. Greaves, N. A. Green, Katherine A. Grice, A. W. Griffiths, H. E. D. Griffiths, B. C. Hale, Antoinette I. Hallett, M. L. Hamilton, F. G. Hardman, T. S. Hart, N. E. Harvey, W. Hertzog, B. M. Hibbard, Iris A. Hicks, R. G. Hirons, W. G. Hodges, J. W. Hughes, F. T. Hunt, J. A. Hunt, G. B. Ihringer, Sylvia R. Ingold, Sybil E. Jacob, D. C. James, D. Jenkins, F. G. Johnson, J. W. Johnson, A. G. Jones, D. K. B. Jones, Eleanor M. Jones, J. L. Jones, R. T. B. Jones, M. Kaye, G. A. Lawrence, J. Lawson-Matthew, Annie M. Legge, J. C. Leonard, G. A. Levell, M. Lewis, Marian H. Littlejohn, S. Liu, Eunice Lockey, M. Long, M. J. R. Mackrill, E. N. Marks, G. W. Marsh, Nancy A. H. Marston, Frances E. Mather, J. R. M. Mathieson, J. M. Mayer, A. P. Melgrave, A. J. Merrifield, W. E. Miall, J. L. Milligan, Mary Mitchell, R. E. Molloy, Pamela M. Moody, R. C. Nauth-Misir, Patricia L. Obee, Joan E. M. O'Brien, D. F. O'Malley, J. H. Owen, J. B. Parsons, D. J. Pearce, A. O. Peters, Anne M. Phillips, G. F. M. Pierce, Theresa Posner, R. J. Powell, Elma P. Pridham, Patience Proby, R. J. H. Raines, W. D. Ratnavale, A. M. Reader, Marion E. Record, J. H. Rees, B. G. Reynolds, C. S. Rhodes, J. A. Richards, D. M. Richardson, D. McL. Riddell, J. MacL. G. Ritchie, A. W. Roberts, Margaret G. Roberts, Margaret E. Robson, I. Rocker, Thea G. T. Rose, Margaret M. Sander, J. R. Saunders, Diana M. Scott, A. L. Slater, B. O. Smith, Florence L. Smith, G. W. Smith, S. R. Somers, P. R. Sowerby, Gwyneth M. Stevens, L. Tann, J. S. Taylor, Eira Thomas, M. G. Thompson, Eleanor M. R. Till, P. A. Van der Merwe, C. B. Vaughan, M. G. S. Vercoe, D. W. Verity, M. H. Vickery, A. J. Wainwright, J. C. N. Wakeley, Dorothy C. Wall, J. St. G. Warmann, Mary D. B. Warnock, B. Waters, Paula M. Watkin, Mary D. Watkins, Sheila M. Watts, Daphne E. Webber, Mary M. Weeks, O. Weiss, Josephine P. Werren, W. N. Whamond, A. E. Wheatley, M. L. Wheatley, R. J. M. Whittle, A. Wiener, A. O. Wilkey, P. O. Williams, V. A. Wills, Kathleen M. Witham, R. FitzG. Wright.

Diplomas

Diplomas in Physical Medicine, in Tropical Medicine and Hygiene, in Ophthalmic Medicine and Surgery, in Ophthalmology, in Child Health, and in Laryngology and Otology were granted, jointly with the Royal College of Surgeons of England to the successful candidates whose names are printed below in the report of the meeting of the Royal College of Surgeons of England.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

At a meeting of the Council of the College held on April 13 diplomas were granted jointly with the Royal College of Physicians of London to the following successful candidates:

DIPLOMA IN PHYSICAL MEDICINE.—T. K. Davidson, K. A. Sowden, H. T. van Diggelen, E. F. C. Wadge.

DIPLOMA IN TROPICAL MEDICINE AND HYGIENE.—A. F. Adedoyin, A. A. Alidina, N. P. Bector, H. Binysh, R. Bradley, D. V. Doshi, A. Douglas, S. Fernando, H. B. Gibson, M. T. Gillies, W. H. Grant, J. Gulasekharam, C. W. J. Hingston, T. Husain, J. A. Hyde, S. W. Hynd, P. Jordan, A. Kabir, B. M. Kher, P. H. Lomax, B. S. Moos, J. M. Nowakowski, H. Omer, G. Ou Ta Wei, C. Sanmartin-Barberi, Y. A. Shaheen, Betty, E. Shortland, B. M. A. Sulaiman, E. J. Talbott, Edith M. Waterhouse, J. W. Weston.

DIPLOMA IN OPHTHALMIC MEDICINE AND SURGERY.—M. Ali, M. H. Alvi, B. Bandyopadhyay, D. G. Bisset, J. Burns-Brown, P. T. Clover, Le R. C. Cody, A. Cohen, T. Daly, J. B. Dancer, T. Dok, Catherine M. Fitzpatrick, H. G. Frampton, J. Gloster, E. C. Glover, I. B. Goel, E. J. Hanley, S. A. Heath, Enid A. Hughes, J. B. Hutten, H. B. Jacobs, Annie M. Jones, Iris Kane, S. A. Lashkor, D. Lyen, H. M. Lyons, F. D. McAuley, Margaret E. McClelland, C. M. McLean, M. Mazhar, J. M. D. Meyer, S. M. Mishra, K. B. Mistry, E. L. Moore, N. S. Moores, K. S. Murray, M. Park Ross, J. C. Parr, J. Pendergast, T. B. Rankine, S. Robertson, G. J. Romanes, A. K. Sen, M. H. Shahrestani, C. D. Sinha, J. J. Teeuwen, R. S. Thubron, A. Wahby, M. L. Waugh, D. J. K. Wilkie.

DIPLOMA IN OPHTHALMOLOGY.—T. H. Bassett, Agnes M. Brogan, G. C. T. Burfitt-Williams, F. J. Curtis, D. W. Ellis-Jones, Elizabeth M. M. Fisher, A. M. Gokhale, J. L. Kyle, D. H. Sinanan, R. J. H. Smith.

DIPLOMA IN CHILD HEALTH.—W. F. Allan, N. G. Anderson, A. K. Basu, Kathleen N. Berger, T. B. Binns, Dorothy J. Blake, Mary M. M. Boyd, R. St. J. Buxton, I. J. Carré, Patricia J. Chapman, Phyllis M. E. Cook, Anne L. Craig, Evelyn M. Crawford, B. A. D. Curtin, A. R. Darlow, E. Ellis, Harriet E. Faris, A. W. Ferguson, Margaret J. W. Finlayson, D. M. Flanagan, Mary E. Forrester, Margaret F. Fry, J. M. Gooch, Mary Goodyear, D. A. J. Grewar, G. E. Griffiths, M. H. M. Hamza, M. Z. Hasan, Margaret Heller, R. High, Mary Hobson, Gillian M. Hunt, J. A. Irwin, Margaret J. Jackson, R. J. Kernohan, Gladys A. Kitching, S. J. Koegler, P. N. Laha, Margaret S. B. Langton, Isabel J. K. Ledger, J. A. Loveless, Elizabeth Lucey, J. Luder, J. C. Macaulay, Martha E. C. McIntosh, J. McLuskie, N. K. Macrae-Gibson, Beryl W. Marson, Sheila Martin, Diana M. Mason, Leila Mirchandani, Mary Montgomery Campbell, J. R. Murdock, E. G. Murphy, Phyllis M. Neil, Barbara A. Neville, C. H. Neville-Smith, R. W. Panton, D. S. Parken, T. J. Parkinson, I. Y. Peress, M. W. Phadke, Audrey K. Raistrick, P. P. Rickham, A. T. Rogers, H. S. Samuel, Vivienne Simmons, G. S. Stable, D. G. H. Stone, Isabel F. Sutherland, P. E. Sylvester, W. C. Taylor, G. H. Valentine, R. Wall, Norma M. Whalley, R. Wigglesworth, Margaret D. Wigley, Patricia H. Will, Sheila G. Wills, Leila E. Wynter.

DIPLOMA IN LARYNGOLOGY AND OTOLOGY.—S. Arciszewski.

The Services

A *Supplement* to the *London Gazette* has announced the following awards:

Territorial Efficiency Decoration with 1st and 2nd Clasps.—Major R. Anderton, R.A.M.C., T.A.

Territorial Efficiency Decoration and 1st Clasp.—Lieutenant-Colonels (Honorary Colonels) N. Health and E. E. S. Wheatley, C.B.E., D.F.C.; Majors J. B. Bishop, A. R. Bowtell, G. O. Gauld, J. F. Hedley, J. G. Lawson, M.B.E., F. J. Lidderdale, M.C., W. G. Love, S. Newsom, J. H. Richmond, and M. I. Silverton; Captains (Honorary Majors) H. G. Dodd, A. F. Dunn, R. A. Highmoor, I. A. R. Mackenzie, and J. H. Mayer; Captain J. A. Dudgeon, M.C., R.A.M.C., T.A.

Territorial Efficiency Decoration.—Lieutenant-Colonel (Honorary Colonel) J. Morrison, O.B.E., M.C.; Lieutenant-Colonel G. H. G. Hope, O.B.E., M.C.; Majors (Honorary Lieutenant-Colonels) J. D. Allan, D. S. Austin, H. H. Corrigall, R. G. Evans, M.B.E., R. M. Gray, R. D. Holloway, W. D. Jackson, O.B.E., M.C., D. J. Johnson, M.B.E., H. Mannington, J. S. Miller, W. Minns, J. M. Scott, C.B.E., and D. J. Wigginton, M.B.E.; Majors H. K. Ashworth, H. Baxter, D. A. Brigg, R. R. Davies, S. Freeman, H. Gass, O.B.E., F. H. Hunnard, J. L. Lovibond, W. K. McCollum, C. J. Mackinlay, W. Milburn, M.B.E., P. C. Mitchell, J. G. Oliver, J. P. Parkinson, J. H. Pattyson, R. A. Read, J. A. Reid, W. C. G. Russell, R. Selby, E. H. P. Smith, H. Stevenson, G. W. Thomas, A. McN. Tomlinson, W. F. de C. Veale, J. W. Wilson, and A. Young; Captains (Honorary Lieutenant-Colonels) F. Murray and D. Turner; Captains (Honorary Majors) W. G. H. Allen, C. O. Barnes, M.B.E., W. A. Bellamy, J. W. Brown, W. Davidson, F. Elliott, K. N. Flint, W. R. Gauld, The Hon. E. B. Hacking, M.B.E., C. W. Horncastle, S. A. Jenkins, R. L. Lamming, C. B. Macleod, D. E. O'Connor Cuffey, W. J. E. Phillips, J. S. Prichard, M.C., J. A. Ross, and A. M. W. Thomson; Captain (Temporary Major) R. A. Foucar (killed in action); Captains S. G. Abelson, S. G. Cowper, S. L. Frank, C. W. John, P. C. Joscelyne, B. Kaplan, F. H. Leckie, M.C., A. MacDonald, R. M. McGregor, J. M. Moran, W. A. H. Stevenson, and F. J. D. Webster, R.A.M.C., T.A. Majors W. Brockbank, V. K. Drennan, A. McDowall, and H. McE. Morris, R.A.M.C., T.A.R.O.

DEATHS IN THE SERVICES

Colonel CHARLES ROBERT MORTIMER GREEN, late I.M.S., died at the Royal Surrey County Hospital, Guildford, on April 10 within a few weeks of his eighty-seventh birthday. A student of the London Hospital, he qualified L.S.A. in 1884 and took the conjoint diploma a year later. Shortly afterwards he took the Cambridge D.P.H. and the F.R.C.S. Two years after qualifying he joined the Indian Medical Service, and for 35 years had a distinguished career in Calcutta and the Central Provinces. He took part in the Black Mountain and Tirah expeditions, and served in Mesopotamia and on the North-west Frontier in the 1914–18 war, after which he was made Inspector-General of Civil Hospitals in the Central Provinces and honorary surgeon to the King. Among other posts he held that of civil surgeon at Simla and later he was for some years on the surgical staff of the Eden Hospital, Calcutta. Apart from his surgical skill, he had great physical strength and endurance. Of quiet and imperturbable bearing, he was about as fair-minded a man as one could meet, a point always appreciated by all his staff, senior and junior. He was a big man in every way. He retired in 1921 and not long afterwards settled in Guildford, where he became well known. During the twenty-seven years of his residence there his big-hearted generosity and tremendous zest for life endeared him to a host of friends. Until the last fatal illness overcame him he took a keen interest in everything that was worthwhile, and lived every moment to the full. Even within a week of his death he insisted on being driven to Richmond to see the final of the Hospital Rugby Cup played, and enjoyed every moment of the game. His old hospital were meeting St. Thomas's in this game. Sixty-five years previously he himself had played for the London Hospital in this match, when they were the winning side.

INDIAN MEDICAL SERVICE DINNER

The annual dinner of the Indian Medical Service will be held at the Connaught Rooms, Great Queen Street, Kingsway, London, W.C., on Wednesday, June 21, at 7 for 7.30 p.m., when the chair will be taken by Major-General Sir John Taylor. The cost of the dinner, which is inclusive of drinks before and during the dinner, cigarettes, and gratuities to waiters, is £2 2s. per head. The charge for a ticket to subscribing members of the dinner club is 16s. 6d.; in all other cases, £2 2s. Evening dress with decorations, dinner jacket with miniatures, or uniform should be worn. Applications for tickets, with remittance, should be sent to Mr. A. W. Brown, Grindlays Bank Ltd., 1, Bridge Street, London, S.W.1, as early as possible.

No. 16

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended April 22.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each Infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1950 (a)	(b)	(c)	(d)	(e)	1949 (Corresponding Week) (a)	(b)	(c)	(d)	(e)
Meningococcal infection	35	2	13	—	3	27	2	8	2	—
Deaths		—	—				—	1		
Diphtheria	55	10	13	2	—	103	7	28	4	4
Deaths	—	—	—	—	—	1	—	1	—	—
Dysentery	291	15	81	—	1	49	7	16	—	3
Deaths		—			—		—		—	—
Encephalitis, acute	5	—	—	—	—	—	—	—	1	—
Deaths		—					—			
Erysipelas			23	8	4			19	7	4
Deaths							—			
Infective enteritis or diarrhoea under 2 years				15					22	
Deaths	18		2	—	—	24	3	3	3	—
Measles*	6,805	174	553	110	378	13,066	1635	299	203	172
Deaths†			1	1	2			—	—	—
Ophthalmia neonatorum	39	2	20		1	44	2	13	—	—
Deaths										
Paratyphoid fever	1	—	1(A)		—	1	—	1(B)	—	—
			1(B)							
Deaths	—		—		—	—	—	—	—	—
Pneumonia, influenzal	659	30	6	—	14	731	30	9	21	18
Deaths (from influenza)‡	47	7	1	3	4	95	6	2	2	—
Pneumonia, primary			171	¶				202	43	
Deaths	227	28		10	8	277	36		10	9
Poliomyelitis, acute	24	3	2	5	2	5	2	1	—	—
Deaths§	2	—		—		—	—			
Puerperal fever		—	6				—	5		
Deaths										
Puerperal pyrexia‖	76	4	8		3	81	9	3	2	1
Deaths							—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,164	100	165	77	81	1,039	65	162	73	36
Deaths†			—	—	—			—	—	—
Smallpox	1	—	—		—	7	3	—	—	—
Deaths					—				—	—
Typhoid fever	1	—	1	1	—	2	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	1
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths					—				—	—
Whooping-cough	2,810	108	385	84	55	2,267	194	150	79	73
Deaths	6	—	—	1	1	11	3	1	3	1
Deaths (0–1 year)	268	30	35	22	16	335	38	30	27	8
Deaths (excluding stillbirths)	5,150	817	605	207	146	5,187	753	642	206	130
Annual death rate (per 1,000 persons living)			12·2					12·9	12·8	
Live births	8,079	1298	970	393	271	6,880	1152	894	375	253
Annual rate per 1,000 persons living			19·5					17·9	23·2	
Stillbirths	227	35	30			180	27	22		
Rate per 1,000 total births (including stillborn)			30					24		

* Measles is not notifiable in Scotland, and the returns are therefore an approximation only.

† Deaths from measles and scarlet fever for England and Wales, London (administrative county), will no longer be published.

‡ Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

§ The number of deaths from poliomyelitis and polio-encephalitis for England and Wales, London (administrative county), are combined.

‖ Includes puerperal fever for England and Wales and Eire.

¶ Primary pneumonia no longer notifiable in Eire.

EPIDEMIOLOGICAL NOTES

Smallpox

Certain cases of smallpox and suspected smallpox have been notified during the week. The first case, a girl who arrived in this country by air from Switzerland on April 28, attended the out-patient department of a London teaching hospital with a generalized rash which raised the suspicion of smallpox. All precautions were taken pending laboratory investigations that ultimately proved her to be a case of generalized vaccinia.

The second case was that of a man who was taken off a plane due to depart from Northolt for Renfrew on May 5. He had the signs and symptoms of an acute illness accompanied by a rash. The airport medical officer considered that there was a possibility of the case being one of smallpox, and the man was removed to isolation. This man had earlier the same day landed at London Airport from Calcutta, which he had left on May 3. All the necessary administrative action was taken, including notification of the circumstances of the case to countries to which contacts were proceeding. The results of the laboratory examination which have now been received do not confirm the original suspicion, and the case is not now regarded as one of smallpox.

On May 4 and 5 two cases from Halifax and one from Sowerby Bridge, near Halifax, were taken into isolation after investigation as suspected cases of smallpox. The normal preventive measures were at once put in hand by the local health authorities concerned.

Discussion of Table

In *England and Wales* a decrease occurred in the number of notifications of measles 1,083, scarlet fever 221, acute pneumonia 63, and dysentery 12, while the only increase of any size was whooping-cough 353.

The largest decreases in the incidence of measles were Lancashire 265, Durham 212, Kent 200, Leicestershire 137, Suffolk 118, Staffordshire 115, and Northamptonshire 104, and the largest increase was 79 in Warwickshire. The number of notifications of scarlet fever declined slightly in every region except London and Yorkshire. In most areas only small variations occurred in the trends of whooping-cough; the largest rises were Yorkshire West Riding 179, Norfolk 43, and Durham 35, and the largest decrease was 51 in Warwickshire. The chief feature of the local returns of diphtheria was an increase of 4 in Durham.

The number of notifications of dysentery still remains high. The largest returns were those of Yorkshire West Riding 81 (Sheffield C.B. 26, Batley M.B. 16, Leeds C.B. 15, Bradford C.B. 14); Durham 65 (Stanley U.D. 15, West Hartlepool C.B. 15, Blaydon U.D. 11, Sunderland C.B. 6, South Shields C.B. 6); Lancashire 48 (Manchester C.B. 28); Yorkshire North Riding 21 (Middlesbrough C.B. 21); London 15 (Islington 6); Essex 15 (Ilford M.B. 12); and Northumberland 10 (Newcastle-upon-Tyne C.B. 7).

In *Scotland* the chief features of the returns were increases in the number of notifications of measles 325 and whooping-cough 86, the increased incidence being mainly due to the experience of Glasgow. Small decreases in incidence were recorded for the remaining infectious diseases; the largest falls were dysentery 18 and scarlet fever 14. The largest returns for dysentery were Glasgow 55 and Dundee 12.

In *Eire* an increase of 15 in the notifications of measles and a decrease of 19 in the notifications of scarlet fever were the only variations in the trends of infectious diseases.

In *Northern Ireland* the notifications of measles declined by 55 and the notifications of whooping-cough rose by 15. The largest fall in the incidence of measles was 47 in Antrim county, while the rise in whooping-cough was mainly contributed by Down county.

Week Ending April 29

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,124, whooping-cough 3,276, diphtheria 55, measles 6,380, acute pneumonia 548, acute poliomyelitis 26, dysentery 275, paratyphoid fever 7, typhoid fever 3. The deaths from influenza in the great towns numbered 32.

Medical News

Invested by the King

The King invested Sir Morton Smart with the insignia of the Knight Grand Cross of the Royal Victorian Order on May 8. The ceremony took place at the King Edward VII Hospital for Officers, where Sir Morton Smart is a patient.

Presentation

Professor Carl Browning, F.R.S., has been presented with a bronze bust of himself in recognition of his 30 years in the chair of bacteriology at Glasgow University. It has been accepted on behalf of the University for inclusion in the Fine Arts Collection. The presentation was made on April 28 by Professor Sir Robert Muir, F.R.S. The bust was by Mr. Benno Schotz.

Honorary Fellow

At the annual meeting of the Association of Surgeons held in London last week Mr. Victor Bonney was elected an Honorary Fellow.

Institute of Orthopaedics

The chairman and Committee of Management of the Institute of Orthopaedics gave a reception on April 27 in the out-patient department of the Royal National Orthopaedic Hospital in London. The director of studies, Mr. H. J. Seddon, observed in welcoming the guests that the reception was being held to celebrate the emergence of the Royal National Orthopaedic Hospital as a postgraduate teaching institution and the establishment of the Institute of Orthopaedics. In this the hospital authorities had acted most generously in making accommodation available for the purposes of the Institute. It was hoped that in time a new hospital would be built on an adjacent site and that the old hospital buildings would be entirely at the disposal of the Institute. The space had been utilized for modern laboratories, lecture-room, library, and photographic department. It was hoped soon to erect in the grounds of the country hospital at Stanmore laboratories for animal experiment and biochemical research.

Association of Surgeons of Great Britain and Ireland

Professor Lilian Penson, vice-chancellor of the University of London, held a reception at the Senate House on May 5 in honour of the Association of Surgeons of Great Britain and Ireland. Guests were able to inspect the whole of this modern building, including the Senate Room and University Library, in which a collection of rare books had been arranged. Illustrated botanical works gave vivid colour to the Map and Paleography Room, where some interesting medical books were also on display.

The New Medical Bill

Some of the practical difficulties that may arise from requiring students to hold hospital appointments for one year before registration have been considered by the Medical Defence Union. For instance, vacancies must be available for them in hospitals, and a student with some disability may be at a serious disadvantage to his competitors. While approving the establishment of a separate Medical Disciplinary Committee, the M.D.U. considers, as does the B.M.A., that the one provided for in the Bill would be too large, 12 being a more suitable number for such a task than 19. In any case, one-third of the quorum should be Elected Members. An important point recommended by the M.D.U. is that the Medical Disciplinary Committee should not be competent to investigate any complaint against a practitioner in the absence of a formal written complaint, except in matters arising out of findings of a court of law. If a Government Department or other official body passes information about a doctor to the G.M.C., the body submitting information should be prepared, if there is to be an inquiry, to arrange for a complainant to appear who would

give evidence to establish the gravamen of the complaint. Appeal to the Judicial Committee of the Privy Council is now thought preferable to appeal to a High Court, though it will probably be more costly.

Scotland's First Food Hygiene Officer

As part of the measures being taken to promote the clean handling of food the Secretary of State for Scotland has appointed Mr. Allan W. Ritchie, F.R.San.I., to be Scotland's first Food Hygiene Officer. He will serve on the staff of the Department of Health for Scotland. There is a growing public interest in the need for the clean handling of food, which many local authorities are trying to stimulate and direct. They are agreed on the need to raise the standards of cleanliness in many establishments where foodstuffs are handled and prepared. Mr. Ritchie will help local authorities to do this and will advise the Department on the nature and extent of the problem. He has relinquished his post as Chief Sanitary Inspector for Edinburgh and has had a long experience in many branches of public health work, including in particular those concerned with the supervision of food premises. He is one of the Scottish representatives on the Working Party at present considering hygiene in relation to the catering industry.

Lecturing in Scandinavia

Professor John McMichael, professor of medicine at the London Postgraduate Medical School, is undertaking a lecture tour, sponsored by the British Council, during May in Denmark, Sweden, Finland, and Norway at the invitation of Scandinavian medical organizations. He is speaking on "Treatment of Cardiac Failure," "Emphysema," and other branches of internal medicine. His visit to Norway at the end of his tour is arranged under the University Interchange Scheme, endorsed by the Anglo-Norwegian cultural convention signed in 1948 to facilitate interchange of university teachers and scholars between the two countries. Professor McMichael will be the guest of the Universities of Bergen and Oslo between May 12 and 25.

Clinical Abstracts in Northern Ireland

The Northern Ireland General Health Services Board is sending monthly to all general practitioners on its list abstracts of material published in the *B.M.J.* and the *Lancet*. The abstracts are taken from original articles, leading articles, and letters, and should be useful in briefly presenting advances in clinical medicine to the busy practitioner, indicating at the same time where he may find the full details.

King Edward's Hospital Fund

Sir Wilson Jameson is joining the staff part-time of King Edward's Hospital Fund on his retirement from his appointment as Chief Medical Officer of the Ministry of Health. He will take up his new appointment on June 1.

COMING EVENTS

Guild of Hospital Librarians

The annual general meeting of the Guild will be held at Chaucer House, Mallet Place, London, W.C.1, on Wednesday, May 17, at 6 p.m. The speaker will be Mr. Douglas Woodruff, editor of the *Tablet*. The business meeting will follow the address by Mr. Woodruff.

British Medical Students Association

The following meetings have been arranged: *Liverpool.*—May 17: Liverpool Medical Students Society A.G.M. *Royal Free Hospital School of Medicine.*—May 18, lecture by Dr. J. Thwaites (chairman of B.M.A. Ethical Committee) on "The Why and Wherefore of Medical Ethics."

Congress of Medicine and Sport

The Eighth International Congress of Medicine and Sport will be held in Florence and Montecatini on May 27–31. Particulars may be obtained from the Italian Embassy, 4, Grosvenor Square, London, W.1. (Telephone Mayfair 3230.)

St. Thomas's Hospital Musical Society

St. Thomas's Hospital Musical Society will perform Fauré's Requiem and anthems by Weelkes, Gibbons, and Purcell in St. Sepulchre's Church, Holborn, on Tuesday, May 23, at 8.30 p.m., to end about 9.40 p.m. Conductor, Mr. Wilfrid Dykes Bower; organist, Mr. John Dykes Bower, D.Mus. No tickets required.

German Radiological Society

A congress organized by the German Radiological Society will be held at Recklinghausen in the British Zone from June 1 to 3. Any British radiologist interested in attending should communicate with the president, Dr. G. Schulte, Knappschaftskrankenhaus, Recklinghausen, Germany (British Zone).

Asthma Congress

The second International Congress on Asthma will be held at Mont-Dore, France, on June 3–5, 1950. Information may be obtained from the secretary at 72, Rue de Faubourg St. Honoré, Paris, 8e.

Chloromycetin Symposium at Milan

There will be an international symposium on the properties and uses of chloromycetin, especially in relation to typhoid fever and brucellosis, during the Second Italian Congress on Antibiotics to be held in Milan on June 3–5. Full particulars about the symposium may be obtained from Centro Informazioni e Studi sugli Antibiotici, Via Francesco Sforza, 38, Milan, Italy.

Food Group's Summer Tour

The Food Group of the Society of Chemical Industry will hold its summer tour in Norway on June 3–12. Full particulars may be obtained from the honorary organizing secretary, Food Group Summer Tour, Government Laboratory, Clement's Inn Passage, Strand, London, W.C.2.

Gastroenterology in Belgium

The Belgian Society of Gastroenterology will meet on June 17–18, 1950, in Brussels to discuss (1) the idiopathic fatty diarrhoeas, and (2) acute haemorrhagic recto-colitis. Particulars may be obtained from Dr. Georges Brohée, 64, rue de la Concorde, Brussels.

Gynaecology Conference

An International Congress of Gynaecology, organized by the French Society of Gynaecology on the occasion of its 20th anniversary, will be held at Paris on June 23–29, 1951, under the presidency of Dr. M. E. Douay. Particulars may be obtained from the Secretary-General, Dr. Maurice Fabre, 1, Rue Jules-Lefebvre, Paris, 9e.

SOCIETIES AND LECTURES

Monday

CAMBRIDGE UNIVERSITY.—At Mill Lane Lecture-rooms (Room 3), Cambridge, May 15, 5 p.m., "*Recent Work on Parapsychology*," by Professor J. B. Rhine (Duke University).

EDINBURGH UNIVERSITY.—At Physiology Lecture Theatre, University New Buildings, Teviot Place, May 15, 5 p.m., "*A Survey of British Dentistry, 1685 to 1921*," by Dr. J. Menzies Campbell.

LONDON UNIVERSITY.—At University College (Anatomy Theatre), Gower Street, W.C., May 15, 5.30 p.m., "*The Cytology and Histochemistry of the Uterus and Placenta*," by Professor G. B. Wislocki (Harvard University).

UNIVERSITY COLLEGE (Physiology Theatre), Gower Street, London, W.C.—May 15, 4.45 p.m., "*Genetics and Biochemistry*," by Professor J. B. S. Haldane, F.R.S.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—At Royal Society of Medicine, 1, Wimpole Street, London, W., May 15, 8.30 p.m., "*Antarctic Exploration*," Cavendish Lecture by Admiral Lord Mountevans.

Tuesday

EDINBURGH POSTGRADUATE BOARD FOR MEDICINE.—At Anatomy Lecture Theatre, University New Buildings, Edinburgh, May 16, 5 p.m., "*Common Faults in the Diagnosis of Heart Disease*," by Dr. W. Evans.

INSTITUTE OF DERMATOLOGY, Lisle Street, Leicester Square, London, W.C.—May 16, 5 p.m., "*Sex Hormones in Dermatology*," by Dr. D. I. Williams.

LONDON UNIVERSITY.—At Bedford College for Women, Inner Circle, Regent's Park, London, N.W., May 16, 5.15 p.m., "*Women in Medicine*," by Professor Winifred Cullis.

LONDON UNIVERSITY.—At University College (Anatomy Theatre), Gower Street, W.C., May 16, 5.30 p.m., "*Les Problèmes Fondamentaux de la Psychophysique dans la Science Actuelle*," by Professor H. Piéron (Lecture in French).

WRIGHT-FLEMING INSTITUTE OF MICROBIOLOGY, St. Mary's Hospital Medical School, Paddington, W., May 16, 5 p.m., "*The Origin of Infectious Disease*," by Professor Perrin H. Long (Johns Hopkins University School of Medicine).

Wednesday

LONDON UNIVERSITY.—At University College (Physiology Theatre), Gower Street, W.C., May 17, 5.15 p.m., "*The Physiology of the Central Nervous System*," by Professor F. Bremer (University of Brussels).

NORTH-EAST LONDON CLINICAL SOCIETY.—At Prince of Wales's General Hospital, Tottenham, N., May 17, 8 p.m., "*The Clinical Application of Forensic Medicine*," by Dr. F. E. Camps.

ROYAL EYE HOSPITAL (KING'S COLLEGE HOSPITAL GROUP), St. George's Circus, London, S.E.—May 17, 5.30 p.m., "*Ophthalmic Neurology*," by Mr. L. H. Savin.

ROYAL MICROSCOPICAL SOCIETY.—At B.M.A. House, Tavistock Square, London, W.C., May 17, 5.30 p.m., film story of Electron Microscope: "*Terra Incognita*," by Mr. W. J. Lloyd; demonstrations from National Institute of Medical Research, by Mr. C. Polge, Dr. A. U. Smith, Mr. J. Smiles, and Mr. F. V. Welch.

Thursday

BRITISH INSTITUTE OF RADIOLOGY, 32, Welbeck Street, London, W.—May 18, 8.15 p.m., annual general meeting; 8.45 p.m., ordinary meeting followed by Presidential Address by Dr. L. H. Gray, M.A., Ph.D.

DUBLIN UNIVERSITY.—At Trinity College (Dixon Hall), Dublin, May 18, 4.30 p.m., "*The Life of the Red Blood Cell*," Frederick Price Lecture by Professor L. J. Witts.

HONYMAN GILLESPIE LECTURES.—At Anatomy Theatre, University New Buildings, Teviot Place, Edinburgh, May 18, 5 p.m., "*Clinical Trials of Adrenocorticotrophic Hormone*," by Dr. J. R. Duthie.

INSTITUTE OF OPHTHALMOLOGY (UNIVERSITY OF LONDON), Judd Street, London, W.C.—May 18, 5.30 p.m., "*Referred Pain*," by Dr. D. Slome.

LONDON UNIVERSITY.—At University College (Anatomy Theatre), Gower Street, W.C., May 18, 5.30 p.m., "*Les Problèmes Fondamentaux de la Psychophysique dans la Science Actuelle*," by Professor H. Piéron (Lecture in French).

MIDDLESEX COUNTY MEDICAL SOCIETY.—At Chase Farm Hospital, The Ridgeway, Enfield, May 18, 3 p.m., general meeting. Short papers: "*Pseudo-obstruction of the Colon (Ogilvie's Syndrome)*," by Mr. J. A. Dunlop and Dr. G. Doel; "*Essential Hypertension in Pregnancy*," by Dr. R. M. Millen.

ROYAL EYE HOSPITAL (KING'S COLLEGE HOSPITAL GROUP), St. George's Circus, London, S.E.—May 18, (1) 4.15 p.m., "*Visual Fields: Normal and Pathological*," by Mr. C. Taylor; (2) 5.30 p.m., "*Operative Surgery*," by Miss J. M. Dollar.

ROYAL SOCIETY, Burlington House, London, W.—May 18, 4.30 p.m., "*Food Research under the Department of Scientific and Industrial Research*," by Mr. F. Kidd, D.Sc., F.R.S.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.—At 26, Portland Place, London, W., May 18, 7.30 p.m., "*The Problem of Loiasis in West Africa*," by Professor R. M. Gordon. A discussion will follow.

ST. GEORGE'S HOSPITAL MEDICAL SCHOOL, Hyde Park Corner, London, S.W.—May 18, 4.30 p.m., "*Psychiatry*," lecture-demonstration by Dr. M. A. Partridge.

WELSH NATIONAL SCHOOL OF MEDICINE.—At Reardon Smith Lecture Theatre, Park Place, Cardiff, May 18, 8 p.m., "*Disease Prevention—Past and Present*," by Professor F. Grundy.

Friday

BIOCHEMICAL SOCIETY.—At Physiology Institute, Newport Road, Cardiff, May 19, 2 p.m., 286th meeting. Papers will be read.

BRITISH INSTITUTE OF RADIOLOGY, 32, Welbeck Street, London, W.—May 19, 5 p.m., meeting of medical members.

FACULTY OF RADIOLOGISTS.—At Royal College of Surgeons of England, Lincoln's Inn Fields, London, W.C., May 19, 2.30 p.m., annual general meeting; 3.30 p.m., "*Malignant Disease in Childhood from the Viewpoint of the Diagnostic Radiologist*," Skinner Lecture by Dr. Cecil G. Teall. Open to all members of the medical profession. 7 for 7.30 p.m., annual dinner.

LONDON UNIVERSITY.—At University College (Physiology Theatre), Gower Street, W.C., May 19, 5.15 p.m., "*The Physiology of the Central Nervous System*," by Professor F. Bremer (University of Brussels).

MAIDA VALE HOSPITAL FOR NERVOUS DISEASES MEDICAL SCHOOL, Maida Vale, London, W.—May 19, 5 p.m., clinical neurological demonstration, Dr. Helen Dimsdale.

ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS, 58, Queen Anne Street, London, W.—May 19, 5 p.m., "*Habitual Abortion*," Scholarship (Sterility) Lecture by Mr. Linton M. Snaith.

ROYAL EYE HOSPITAL (KING'S COLLEGE HOSPITAL GROUP), St. George's Circus, London, S.E.—May 19, 4.15 p.m., "*Pathology*," by Miss M. Savory.

Saturday

KENT PAEDIATRIC SOCIETY.—At Royal Star Hotel, Maidstone, May 20, 2.30 p.m., "*Recent Trends in Immunity*," by Dr. H. J. Parrish.

APPOINTMENTS

Drs. Isaac Newton and Joseph Patrick Fehily, O.B.E., have been reappointed Official Members of the Legislative Council of Hong Kong.

HOSPITAL FOR SICK CHILDREN, Great Ormond Street, London, W.C.—*House-physicians (Junior Registrar Grade)*, N. R. Butler, M.D., M.R.C.P., D.C.H., J. W. Evans, M.B., B.Ch., Helenor F. Lochhead, M.B., Ch.B. *House-surgeon to Orthopaedic and Plastic Departments (Junior Registrar Grade)*, J. P. Partridge, M.B., B.S. *Registrar to Department of Physical Medicine (Registrar Grade)*, D. H. Brooks, B.M., B.Ch. *Assistant Resident Medical Officer, Tadworth (Junior Registrar Grade)*, Elizabeth L. Watson, M.B., Ch.B.

KING'S COLLEGE HOSPITAL, Denmark Hill, London, S.E.—The following appointments, with the dates indicated in parentheses, are announced: *Assistant Surgeon*, A. J. Heriot, M.S., F.R.C.S. (December 20, 1946); *Assistant Physician*, S. Oram, M.D., F.R.C.P. (December 20, 1946); *Physician to Department of Psychological Medicine*, J. D. N. Hill, M.B., F.R.C.P., D.P.M. (January 1, 1947); *Assistant Physician in Dermatological Department*, D. I. Williams, M.B., B.S., M.R.C.P. (March 1, 1947); *Assistant Thoracic Surgeon*, W. P. Cleland, M.S., F.R.C.S., M.R.C.P. (April 1, 1948); *Assistant Surgeon to Urological Department*, Harland Rees, B.M., B.Ch., F.R.C.S. (April 1, 1948); *First Assistant to Children's Department*, Mary J. Wilmers, M.D., M.R.C.P. (June, 1948); *Assistant Anaesthetist*, S. A. Mason, M.B., B.S., D.A. (May 1, 1949); *Plastic Surgeon*, F. T. Moore, O.B.E., F.R.C.S., M.R.C.P. (August 2, 1949); *Director of Department of Diagnostic Radiology*, J. E. Blewett, M.D., F.F.R. (August 15, 1949). (*Corrected announcement.*)

MACKENZIE, KENNETH G. F., M.B., B.Chir., F.R.C.S., Consultant Assistant Surgeon, North-west Durham Group of Hospitals, Newcastle-upon-Tyne Regional Hospital Board.

SOUTH-WESTERN REGIONAL HOSPITAL BOARD.—*Consultant Orthopaedic Surgeon in North Gloucestershire Clinical Area*, J. F. Bourdillon, B.M., F.R.C.S. *Dental Surgeon in North Gloucestershire Clinical Area*, Thomas Jackson, F.R.F.P.S., F.D.S. R.C.S. *Clinical Assistant to Obstetric and Gynaecological Department of Royal Devon and Exeter Hospital*, Margaret C. N. Jackson, M.B., B.S., D.Obst.-R.C.O.G.

WARRACK, JOHN, M.B., Ch.B., D.P.H., Medical Officer of Health and School Medical Officer, Borough of Newcastle-under-Lyme, Staffordshire.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

Barry.—On April 27, 1950, to Monica (formerly Craig), wife of C. T. Barry, M.D., D.A., of 20, Garscube Terrace, Edinburgh, a daughter.

Gibbins.—On April 24, 1950, at the Queen Elizabeth Hospital, Birmingham, to Pamela (formerly Aviss), M.B., Ch.B., wife of Robert E. Gibbins, F.R.C.S., a daughter.

Gill.—On April 30, 1950, at Mount Alvernia, Godalming, to Aileen, wife of W. G. Gill, M.Chir., F.R.C.S., a son.

Gurling.—On May 6, 1950, to Nonie (formerly Sempill), wife of Kenneth Gurling, M.D., M.R.C.P., a son.

Summers.—On April 26, 1950, at Rugby, to Mary, wife of Dr. H. A. Hamilton Summers, a daughter.

Wilson.—On April 30, 1950, at the Queen Elizabeth Hospital, Birmingham, to Patricia (formerly McCullough), wife of Noël Wilson, Ch.M., F.R.C.S., a daughter—Jane.

DEATHS

Allan.—On May 1, 1950, at a Glasgow infirmary, William Dick Allan, M.D., of Clydebank, Glasgow, aged 56.

Ashley-Emile.—On May 4, 1950, at Aspley House, Chester Road, Stretford, Manchester, Lester Ernest Ashley-Emile, L.R.C.P.&S.Ed., L.R.F.P.S.Glas.

Balfe.—On May 1, 1950, at Edinburgh, Basil George Hamilton Balfe, M.B., Ch.B.

Bodman.—On April 29, 1950, at Cranleigh, Surrey, Christopher Osmond Bodman, M.D., F.R.C.S.Ed.

Bryson.—On April 30, 1950, at St. Briavels, Gloucester, Margaret Edith Bryson, M.B., Ch.B., late of 20, Chiltern Avenue, Bushey, Herts.

Burnett.—On April 28, 1950, at West Worthing, Sussex, Frank Marsden Burnett, M.D., D.P.H., formerly of Sevenoaks, aged 80.

Corner.—On May 2, 1950, at his home, Stratton End, Beaconsfield, Bucks, Edred Moss Corner, M.Ch., F.R.C.S., late of 37, Harley Street, London, W.

Edwards.—On May 4, 1950, at 32, Avondale Road, Bromley, Kent, Frederic William Edwards, M.R.C.S., L.R.C.P., aged 80.

Galt.—On May 4, 1950, William James Galt, M.B., B.Ch., of Westerland, Kingsbridge, South Devon.

Gellatly.—On May 6, 1950, at 21, Earle Road, Bramhall, David Gilbert Gellatly, L.R.C.P.&S.Ed., L.R.F.P.S.Glas., late of Fairfield, Manchester, aged 72.

Goodfellow.—On May 1, 1950, at Kenwood, Walton Road, Chesterfield, James Anderson Goodfellow, M.B., C.M., aged 85.

Hicks.—On May 2, 1950, at "Ivydene," Easingwold, Yorks, Edward Buller Hicks, L.R.C.P.&S.Ed., L.R.F.P.S.Glas., aged 81.

Langford.—On May 1, 1950, at Wonford House Hospital, Exeter, Morris Charles Langford, M.R.C.S., L.R.C.P., Surgeon Captain, R.N., retired, aged 81.

Lowther.—On April 30, 1950, at Lancaster Royal Infirmary, Richard Charles Lowther, M.B., Ch.B., of Fernleigh, Grange-over-Sands, Lancs.

Mackworth.—On May 3, 1950, at Greystones, Dyce, Aberdeenshire, Norman Walter Mackworth, M.B., F.R.C.S.Ed., J.P., Lieutenant-Colonel, I.M.S., retired.

McLeay.—On April 30, 1950, Charles William McLeay, M.D., D.P.H., Captain, R.A.M.C., retired, of Crondall End, Yateley, Surrey, formerly of Watford, Ontario, Canada.

Pike.—On May 6, in London, Douglas Reginald Pike, M.B., B.Ch., of Stevenage, Herts.

Thomson.—On May 2, 1950, at Davaar, Craigendoran Avenue, Helensburgh, Henry Hyslop Thomson, M.D., D.P.H., late of Hertford.

Tyndale.—On March 12, 1950, Mary Winifred Tyndale, M.R.C.S., L.R.C.P., of 76, Church Street, Kensington, London, W.

White.—On April 19, 1950, at 17, Holland Park Avenue, London, W., Christopher Theodore Redwood White, L.R.C.P.&S.Ed., L.R.F.P.S.Glas., aged 76.

Young.—On April 8, 1950, at West Herts Hospital, Alexander Waugh Young, *M.C.*, M.D., F.R.C.S.Ed.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

On Taking Snuff

Q.—*I have found that the easiest way to give up smoking is by taking tobacco snuff. What is the action of moderate doses of snuff (a) locally on the nose and pharynx, (b) on the lungs, and (c) generally? Is it true that the more solid particles of snuff as compared with tobacco smoke would be more injurious to the nose and lungs? On the other hand, the sneezing effect seems to disappear after a time.*

A.—Snuff causes mild irritation of the nose, producing sneezing in the tyro. The practised snuff-taker does not sneeze, but may eventually develop some degree of atrophic rhinitis, and the acuity of smell is usually diminished. Sir Buckston Browne was convinced that snuff was a useful prophylactic against the common cold (*B.M.J.*, 1947, **1**, 570). Properly used, snuff does not enter the pharynx or respiratory tract, which are unaffected by it. The snuff-taker is thus not afflicted by the smoker's cough. Tobacco snuff contains 0.3 to 1% of nicotine, which is readily absorbed by the nasal mucous membrane, and if taken in sufficient quantities may produce the same effects as those that arise from the smoking of tobacco: cold hands and feet from vasoconstriction, an increase in the metabolic rate, tachycardia (*B.M.J.*, 1947, **1**, 570), an antidiuretic effect (*B.M.J.*, 1948, **2**, 169), and a rise in blood pressure (*Lancet*, 1948, **1**, 109). There are snuff addicts who have been reported to use 10 to 15 g. daily in pinches of 0.1 g., but ordinary snuffers will not consume more than an ounce a month (1 g. daily). This daily dose of 1 g. of snuff contains from 3 to 10 mg. nicotine, which approximates to the 2–8 mg. provided by a single cigarette according to the extent of inhaling.

Snuff-taking, as the inquirer has found, is a satisfactory substitute for smoking, which was almost completely replaced in Britain by snuffing for over half a century. Dr. Johnson, discussing changing customs while visiting St. Andrews, remarked, "Smoking has gone out," and he was advised by the governor of Fort Augustus to take a plentiful supply of snuff with him to placate the natives of the Hebrides. Smoking as a common habit did not return to this country till the heroes of the Crimea came home smoking Turkish cheroots. One ounce of the very best snuff costs about five shillings and should last about a month, bringing the same psychological satisfaction as 20 cigarettes daily, which would cost about five guineas. The present annual consumption of tobacco in the United Kingdom is about 5 lb. per head, bringing the Government an annual income from tax of about £10 per head from the entire population. If snuff-taking replaced smoking it might beggar the Government, but it would banish the smoker's cough, reduce the incidence of nicotine poisoning, and would solace the doctor in his wards, though at the expense of his diagnostic sense of smell. Rather more important is the possible development of a dry and atrophic nasal mucosa. In certain snuff-takers this does seem to have led to crusting and ulceration of the septum, going on to perforation in some few cases.

Management of Haemophilia

Q.—*How should a case of haemophilia be treated? Is vitamin K of any value in these cases? What is the action of the egg-white derivative anti-haemophilia tablets, and are they of value? What sort of dosages are required in, say, a young man, and must treatment be continued indefinitely?*

A.—The management of a patient with haemophilia resolves itself into (*a*) prevention of injuries and haemorrhages, (*b*) dealing with bleeding and emergencies, and (*c*) general treatment. From the earliest age an affected child must be protected from even slight injury, and gradually educated to the importance of avoiding exercises, games, or sudden movements that may particularly involve and put under strain joints such as the knee, ankle, and elbow, in which haemarthroses readily occur. Even minor operations should be avoided if possible, the greatest care also being taken to conserve the teeth. Nowadays, with close co-operation between doctor and dentist and with proper haematological controls in hospital, dental extractions may be carried out with complete safety, but other, especially major, operative procedures still require the greatest consideration, and should be avoided if at all possible. With severe bleeding either externally or internally the patient must be rested completely in bed until control is established. Affected joints should be protected by wrapping them in wool and resting on a light splint. In the early stages cold applications to the joints may help, but no movement, manipulation, or tapping of the joints must be permitted. After the acute stage has passed, which may take days or even a week or two, light massage, perhaps radiant heat, and gentle passive movements of the joints may be started. Too early manipulation of joints may lead to further bleeding and permanent damage. Later, active movements of the joint can be encouraged and the splint discontinued and replaced for a time by a light supporting bandage.

Occasionally acute abdominal emergencies arise resembling peritonitis, acute appendicitis, appendicular abscess, intestinal perforations, or obstructions, but in almost every case these are really haemophilic manifestations and treatment should be expectant, with complete rest and fresh whole blood transfusions; every effort must be made to avoid opening the abdomen. Fortunately most of the haemorrhagic emergencies in these patients are those with external bleeding, as from cuts, wounds, and following dental extractions. In these cases topical applications of suitable haemostatic agents can be applied readily and directly to the bleeding points, making treatment much easier and more effective. In these cases the semi-clotted blood and debris are cleared from the bleeding points in order to allow the close application of a dressing soaked in a suitable haemostatic agent, such as thrombin, fibrinogen, Russell-viper venom, dried plasma, anti-haemophilic globulin, or, if necessary, fresh whole blood or plasma. Fibrin foam, gelatin sponge, and oxidized cellulose are often useful media for direct application either alone or soaked in the haemostatic solutions, while preparations or gauzes of calcium alginate have also proved of value. Superficial wounds are easily treated in this way, but bleeding tooth sockets require a specially made dental splint which can be prepared before extraction and then employed to hold in the socket the plug soaked in the selected haemostatic agent. Drip transfusions of fresh whole blood are most valuable in these cases, but when available the anti-haemophilic coagulation globulin may be used. Where operative procedures are seriously contemplated—and these should very rarely be undertaken on the haemophiliac—fresh whole-blood drip transfusions should be started several hours before the operation and continued throughout and subsequently for as long as may be required, according to the condition of the patient and the coagulation of the blood.

When a patient leaves school he should be put into a suitable job that does not expose him to undue dangers from injury. For older patients who may have to travel some distance to work and who may have permanently impaired joints, the use of a small car saves them much strain and the risks of injury that may arise from the use of public transport. The hospital almoner can help here.

Many additional types of treatment have been suggested in the past for these cases, but they have proved to be disappointing. Vitamin K, vitamin C, vitamin P, and "rutin" have no value. Preparations of egg-white have been given orally as tablets and intravenously, but in the experience of most physicians they have not been of much, if any, value. No details are available about the amount of active material in the tablets, so dosage is arbitrary. A very occasional patient has claimed benefit from their use, but it must be borne in mind that the haemophiliac can and does often show good and long periods of remission without any specific treatment at all. Much is

expected of treatment with the anti-haemophilia coagulation globulin when it becomes freely available.

The treatment of the haemophilic patient, therefore, can be summarized as (*a*) protection from and prevention of injury and mechanical strain to joints; (*b*) prompt treatment of emergencies in hospital with full haematological control; (*c*) avoidance of surgical measures except in cases of great urgency; (*d*) the close co-operation of physician and dentist or surgeon; and (*e*) suitable education, rehabilitation, and employment.

Laryngismus Stridulus

Q.—*What are the most modern views on the aetiology and treatment of laryngismus stridulus? I understand that at necropsy no signs of asphyxia are found, and the cause of death is shock. What is the best treatment? Is tracheotomy indicated?*

A.—Views on this subject have not undergone any particular revision in recent times. Laryngismus stridulus is essentially a manifestation of tetany and occurs in those cases of rickets with a lowering of the blood calcium (this is over-simplifying the situation). Since rickets has become so rare and even minor forms are unusual in many centres, the laryngeal involvement is very seldom seen to-day. The immediate treatment of tickling the fauces or splashing cold water over the head and face is moderately efficient. Sedatives should then be given at once—for example, chloral and bromide by the rectum or intramuscular soluble phenobarbitone. Large doses of vitamin D are also given by mouth or by injection and will slowly correct the fundamental disorder. Parathormone has been used but is not really necessary in the infantile type of case. The condition can be fatal, as the question indicates, and, if the immediate treatment mentioned is not at once effective, tracheotomy would certainly be justified. Other causes of nervous spasm of the larynx may perhaps be in the questioner's mind, especially the curious phenomena of breath-holding or crowing. These, however, are rarely if ever fatal, and for the former the cold-water treatment is usually effective.

Gowers's Syndrome

Q.—*In a recent article in the "British Medical Journal" (February 11, 1950, p. 331) a short description of Gowers's syndrome was given. I have a patient who has on at least two occasions had a typical attack of this condition. I should like to know what precipitates an attack, and how an actual attack may be treated, together with prophylactic measures for avoiding further recurrence. The patient, a man aged 47, has a normal electrocardiograph, normal cholecystograph, and no radiological signs of peptic ulcer. He states that both his attacks occurred shortly after a meal.*

A.—Not a great deal is known about the aetiology of the syndrome described by Gowers in his book, *The Borderland of Epilepsy* (London, 1907), and the diagnosis is often difficult, particularly if through force of circumstances the attack itself is not witnessed by the doctor. Observations on these attacks were made by Ryle (*British Medical Journal*, 1934, **1**, 89). In this and other papers he has rightly emphasized that the most striking, urgent, and dreaded of the symptoms is a sense of impending death. Arising sometimes unexpectedly, but often after a period of prolonged mental strain or anxiety, the attack is usually sudden in onset and may last for ten minutes or half an hour or more before the symptoms begin to abate. The patient will complain of a sense of utter powerlessness, profound weakness, often a sense of unreality in the environment, a sinking or floating feeling, and occasionally also of some minor degree of precordial discomfort, sometimes distinct dyspnoea, a sensation of choking, and perhaps a tingling in the extremities. Facial pallor, cold perspiration, and a superficial appearance of grave illness are at once evident. The pulse is generally slow and of poor volume, but few accurate records of blood pressure, pulse rate, and the response to drugs are available, so that the exact mechanism and its causation are obscure.

The attack is not a hysterical phenomenon, though it is often vaguely labelled "nerves" or confusedly designated a "heart attack." Apparently these attacks, though alarming in themselves and in certain of their features similar to the milder attacks of insulin hypoglycaemia, are never fatal. Whatever the precise mechanism, reassurance as regards the future, combined with sedative drugs, such as small doses of phenobarbitone, do much to diminish their frequency. For the attack itself bromides or phenobarbitone appear equally useful. The investigations undertaken in the particular patient who is the subject of this inquiry might suggest that this man had predominantly dyspeptic symptoms, particularly as his two attacks are said to have occurred shortly after a meal. This is not a usual association of a true attack of Gowers's syndrome, and it would be useful, before making a firm diagnosis, to know more about his symptoms, and in particular about the nature of his supposed dyspepsia.

Intra-articular Injections for Arthritis

Q.—*Some time ago local intra-synovial injections were being advocated for certain cases of arthritis. Can you advise me about (a) the results obtained; (b) the technique, say, for the knee-joint; (c) the type of case, if any, likely to benefit; and (d) the best mixture to use?*

A.—In recent years intra-articular injections, usually of an acid solution, have been advocated for certain types of arthritis, mainly those of a degenerative nature (osteoarthritis). The type of case usually considered suitable is one with osteoarthritis of one or more of the major weight-bearing joints, particularly when the disability is not sufficient to demand operative treatment or when the general condition of the patient makes operation inadvisable. The solution most commonly used is lactic acid (*p*H 5.8) or acid potassium phosphate (1%). There is a proprietary preparation of the latter with 0.5% procaine added. About 10 to 20 ml. of the solution is injected into the joint after local infiltration of the skin and synovial membrane with 2% procaine. Six to twelve weekly injections are given. Although significant successes have been claimed the efficacy of this method of treatment still lacks convincing proof. The opinion of the writer, who has made a fairly extensive trial of the method, is that its theoretical basis is unsound and that in practice it is of no value except perhaps as a placebo. It seems probable that many supposed successes have been due to other factors, such as increased periods of rest during the course of the treatment, and suggestion.

NOTES AND COMMENTS

Survival of the Flea.—Dr. HUGH S. STANNUS (London, W.1.) writes: Dr. Adair Girby's comment (April 15, p. 918) on the sudden appearance of large numbers of fleas remarked by Dr. G. C. Adeney (February 18, p. 448), made as if he were stating facts, cannot be allowed to pass without correction. He appears to be ignorant of the life history of the flea. The egg after two to four days hatches out the larva, which feeds on dead organic matter and undergoes three moults, as a rule three to four, five to six, and seven to fourteen days after hatching. The larva then spins a cocoon in which the pupa becomes imago in about five days. The life history from egg to adult flea therefore takes from fourteen to thirty-three days. Dr. Girby's picture of a "carpet of writhing, newborn fleas, busily disporting themselves after their long entombment" in the egg cannot be accepted.

Correction.—In the article by Sir Sahib Singh Sokhey on "Therapeutic Substances in their International Aspects," which was published in last week's *Journal*, an incorrect reference was given under the heading of "Unification of Pharmacopoeias." It should have read "(*Off. Rec. World Hlth Org.*, **10**, 17)."

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Aitiology, Westcent, London.* ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone. Authors desiring REPRINTS should communicate with the Publishing Manager B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs.
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